

# THE NEOTROPICAL AND MEXICAN SPECIES OF THE ORB-WEAVER GENERA *ARANEUS*, *DUBIEPEIRA*, AND *ACULEPEIRA* (ARANEAE: ARANEIDAE)

HERBERT W. LEVI<sup>1</sup>

**ABSTRACT.** Although *Araneus* species are mainly Holarctic, 113 species are found in Mexico and the Neotropics. Of these, 43 species (38%) were previously known. Twenty names are newly synonymized. The greatest diversity in morphology and number of species is found in Mexico and Central America. South American species of this genus are difficult to separate for several reasons: most species for which both males and females are known belong to the same species group, resulting in a fauna of closely-related, similar species. Furthermore, several species are unusually variable. An additional difficulty is that the species-characteristic embolus of the male palpus is often hidden in the contracted palpus.

The new genus *Dubiepeira*, with the type species *Metepeira dubitata* Soares and Camargo, contains five species found in the Amazon drainage, only two of which were previously known.

Of 13 species found in the area and placed in *Aculepeira*, six were previously known, seven are new. One of these is Holarctic, five are South American. Six species of which males are unknown, all coming from Hispaniola, Mexico, and Central America, may not belong to *Aculepeira*.

A list gives the generic placement of 186 names previously catalogued in the genus *Araneus*. Another list gives 72 names that cannot be recognized because types are immature or lost, and illustrations inadequate.

## INTRODUCTION

In 1969, when I started revising Neotropical and Nearctic species of Araneidae, I made an extensive visit to the British Museum to acquaint myself with various genera of Araneidae and Tetragnathidae. There I made pencil drawings of genitalia and habitus of type species of the Pickard-

Cambridge and Keyserling collections. I revised the Nearctic species first because data for them were much more complete than for the Neotropical species. In the course of my work, I illustrated the genitalia of type species of all genera, and of types of the Neotropical species of the genera I was revising, and thus gathered a large collection of notes and illustrations. (I have made copies of these illustrations available to colleagues who work with orb weavers.) I expected work on Neotropical araneids to proceed rapidly but due to the huge collections that have accumulated, especially in Brazil but also in the AMNH and MCZ, the research has been slowed.

The most important part of a revision is to examine, redescribe and illustrate the type specimens of previously named species, and compare them with specimens of the collections on hand. Many old type specimens had never been illustrated; often the species were distinguished by coloration. Even though old type specimens are usually those of the most common species, often their identity remains unknown. The scarcity of specimens caused early arachnologists to name males and females separately; often a species was named a second or third time for specimens collected in a different country. The least important part of a revision is the description of new species, as the new species are likely to be less common. In this revision, as in two previous ones, only about one-third of the species were previously known, two-thirds are new. There are 20 new syno-

<sup>1</sup> Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts 02138.

onyms of the 41 previously known species names.

Later literature citations of the early described species are commonly misidentifications. Vials of specimens used in revisions often contain determination labels, most of which are wrong. While the determiner may have examined illustrations or even the type specimen of the original name, he may not have known which features made the species distinct. In specimens examined for this revision, *A. bogotensis* and *A. lathyrinus* usually had correct labels, but other species were also labeled *bogotensis* and *lathyrinus*. Such misidentifications and obsolete synonyms give rise to erroneous collecting localities in checklists and catalogs, and are difficult to expunge from the literature.

Despite recent revisions of species of Araneidae and our growing knowledge of araneid orb weavers, some authors, under pressure to publish, ignore all previous work. These authors make new genera, species, even families, with inadequate illustrations of genitalia, but giving elaborate "spine counts" without any evidence that such macrosetae can be used to separate species in this family, or that the author is aware of prior literature.

It is unfortunate that editors and reviewers of systematic papers do not ask authors to show knowledge of previous literature when publishing on new taxa. It is far easier to make new species, new genera, and new families than to acquaint oneself with prior literature, which often is difficult to obtain and in a foreign language.

Bonnet (1961) tells us that of 22,398 spiders listed, more than half (15,560) have not been cited again and presumably have not been found again. (Forty percent of species described between 1758 and 1799, 44% of species described between 1800 and 1849, 55% of species described between 1850 and 1899, and 87% of species described between 1900 and 1939, have not been found again.) Results of this revision show that species originally adequately described and illustrated, and whose types

are in existence and can be examined, can be found again. In *Araneus*, only four recognizable species (*concoloratus*, *anguifer*, *microsoma*, *rufipes*) described before 1940 have no additional specimens in collections. All come from well-collected Central America, and must be considered rare species from specialized habitats.

The orb-weaver family Araneidae, one of the largest families of spiders, contains about 45 valid, previously named genera in the Neotropics and at least 10 new genera for species represented in collections by both males and females. Some species, however, are known only from females, some from males, and a few from juveniles of doubtful generic affinity. Should they be placed with the genus containing most similar species but not necessarily sharing synapomorphic characters, or should they be kept separate until the missing gender is found?

Roewer (1942) lists a total of about 700 species of Araneidae from the Neotropics described before 1940. Brignoli (1983) lists about 250 more, described between 1940 and 1981, for a total of about 950 nominal species. It is difficult to keep an accurate accounting because many common species have been named several times and because there are many new species. But the 13 genera revised up to the present contain perhaps one-third of the Neotropical Araneidae species. Large genera still to be revised are *Mangora*, *Cyclosa*, and *Eustala*. The species of almost all other Neotropical spider families have not been revised.

There is no doubt that many araneid species are rare or live in habitats difficult to sample, such as the crowns of trees. Lethal insect dusts used to bring down arthropods from the tops of trees might just make orb weavers hold on to their threads for dear life.

## MATERIALS AND ACKNOWLEDGMENTS

A revisionary study requires examination of many specimens and assembly of much far-flung information; it is possible only with the cooperation of many others.

The specimens used for this revision belong to or are deposited in the collections listed below. I would like to thank their curators for making the specimens available.

AMNH	American Museum of Natural History, New York, United States; N. Platnick, L. Sorokin	MEG	M. E. Galiano
BMNH	British Museum (Natural History), London, Great Britain; P. Hillyard, F. Wanless	MHNB	Museo de Historia Natural, Bogotá, Colombia
CAS	California Academy of Sciences, San Francisco, United States; W. J. Pulawski, D. Ubick	MHNC	Museu de História Natural, "Capão da Imbuia," Curitiba, Brazil; L. Bittencourt, S. de Fátima Caron
CNC	Canadian National Collections, Ottawa, Canada; C. Dondale	MHNM	Museo de Historia Natural de Montevideo, Uruguay; R. M. Capocasale
CUC	Cornell University Collection, kept in the AMNH; N. Platnick	MHNMC	Museo de Historia Natural, Medellín, Colombia; M. A. Serna D.
CV	C. Valderrama A.	MHNSM	Museo de Historia Natural, Universidad Nacional Mayor de San Marcos, Lima, Peru; D. Silva D.
DU	D. Ubick	MIUP	Museo de Invertebrados, Universidad de Panamá, Panama; D. Quintero A.
FSCA	Florida State Collection of Arthropods, Gainesville, United States; G. B. Edwards	MLP	Museo de La Plata, Facultad de Ciencias Naturales, La Plata, Argentina; R. F. Arrozpide
IBNP	Inventario Biológico Nacional, San Lorenzo, Paraguay; J. A. Kochalka	MNHN	Muséum National d'Histoire Naturelle, Paris, France; J. Heurtault, J. Kovoov
INPA	Instituto Nacional de Pesquisas da Amazonia, Manaus, Brazil; J. A. Raphael	MNRJ	Museu Nacional, Rio de Janeiro, Brazil; A. Timotheo da Costa
IRSNB	Institut Royal des Sciences Naturelles de Belgique, Brussels, Belgium; L. Baert	MNSD	Museo Nacional de Historia Natural, Santo Domingo, Dominican Republic; B. C. Reynoso S.
JAK	J. A. Kochalka	MZSP	Museu de Zoologia da Universidade de São Paulo, Brazil; P. Vanzolini, L. Neme, J. L. M. Leme
JMM	J. M. Maes, León, Nicaragua	MZUF	Museo Zoologico, Università, Florence, Italy; S. Mascherini
MACN	Museo Argentino de Ciencias Naturales, Buenos Aires, Argentina; E. A. Maury	MZUT	Museo ed Istituto di Zoologia "La Specola," Università di Torino, Italy; O. Elter
MCN	Museu de Ciências Naturais, Porto Alegre, Brazil; A. Lise, E. Buckup	NHRM	Naturhistoriska Riksmuseet, Stockholm, Sweden; T. Kronstedt
MCZ	Museum of Comparative Zoology	NMB	Naturhistorisches Museum, Basel, Switzerland; E. Sutter
MECN	Museo Ecuatoriano de Ciencias Naturales, Quito, Ecuador; L. Avilés	NMI	National Museum of Ireland, Dublin, Ireland; J. P. O'Connor, P. J. O'Sullivan

PAN	Polska Akademia Nauk, Warszawa, Poland; A. Riedel, W. Starega, J. Proszynski, A. Slojewska
REL	R. E. Leech
SMF	Forschungsinstitut Senckenberg, Frankfurt am Main, Germany; M. Grasshoff
UCR	University of California, Riverside, United States; S. I. Frommer
USNM	National Museum of Natural History, Smithsonian Institution, Washington, D.C., United States; J. Coddington
WS	W. Shear
ZMB	Zoologisches Museum der Humboldt Universität, Berlin, Germany; M. Moritz
ZMK	Zoologisk Museum, København, Denmark; H. Enghoff
ZSM	Zoologische Staatssammlung, Munich, Germany

Numerous colleagues have provided specimens, natural history information, geographic data, maps, and other information: L. Avilés, R. L. Baptista, F. Coyle, A. Dean, W. Eberhard, J. Kochalka, R. Leech, A. Lopez, W. Maddison, E. A. Maury, H.-G. Müller, J. Palmer and D. Smith, V. Roth, W. C. Sedgwick, M. A. Serna D., H. Sturm, S. Williams. C. Valderrama. A. sent specimens and maps of Colombia; J. Kochalka, natural history observations; H. Höfer, specimens and photographs; P. G. Aguilar, large maps of Peru; and L. Avilés, a map of Ecuador. H. D. Cameron gave valuable advice on the use of Latin.

D. Woessner skillfully did the word processing, and W. and D. Maddison solved numerous computer problems. L. Leibenperger sorted incoming specimens and assisted in all phases of the revision including the mounting of the illustrations. L. Levi and D. Woessner reworded some of the writing. P. Sierwald and the editor, F. Boisse-Kilgo made useful suggestions. To all of the above I express my sincere thanks.

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## METHODS

*Araneus* was one of the most difficult North American genera to revise, especially the small species. I was confronted with numerous different species of females, and could not at first separate the male specimens. It turned out that, for males, the most stable character was the shape of the hidden embolus, while the easy-to-see median apophysis varies within species, or may be similar in different species (Levi, 1971, 1973).

Neotropical *Araneus*, especially the similar-sized species of eastern Brazil and some others, are equally difficult. In males of three or four species, the most prominent feature, the palpal median apophysis, is similar in shape. Nearly identical males accompanied females of various species on the rare occasions they were collected with females. (Being found in a vial with a female never guarantees a correct match.) Not even the shape of the embolus cap and embolus permit clear separation. Do the species interbreed? Are the males identical? Finally, features of the subterminal apophysis, and the embolus and its lamella were found that permitted separation of the males. Unfortunately, the subterminal apophysis is difficult to study; black and heavily sclerotized, its features are not easily seen. The embolus lies behind the conductor and is often hidden. Subterminal apophysis sculpturing and embolus are seen only by careful examination, preferably of just-molted males, or on a black background with reflected light under high power. Other difficulties arose with females of *A. bogotensis*, from the Andes mountains. Some populations are more or less isolated from others and show remarkable variation. Individual females

may differ from each other more than from females of different species, but, in large collections, females with intermediate characters are always found. All the difficult specimens come from mountains of southern Colombia and northern Ecuador. Another puzzling species is *A. expletus*. No two specimens are quite the same. Only larger collections from Central America will determine whether all specimens here placed in *A. expletus* actually belong to the same species.

The Neotropical *Araneus* species can be separated neither by body shape, nor usually by color, pattern, and size (with very few exceptions, e.g., *A. venatrix*, *A. guttata*).

While it might be possible to separate species by molecular methods, it is not permissible to grind up collections from various museums or take tissue samples. In any case, the results would not be useful to ecologists who need to determine their specimens in the field.

The morphometric methods currently in vogue would require measurements of leg length, macrosetae counts, and eye ratios (see *Araneus meropes* below). However, in *Araneus*, leg length and eye ratios of both males and females are variable. Also in *Araneus*, many specimens have regenerated legs, which are slightly shorter than the originals. We tried macrosetae counts of the second leg of males when I first started araneid revisions. It was not successful (Berman and Levi, 1971; Carmichael, 1973). In *Araneus*, features of the genitalic structures are critical for separation of species, and even here there are difficulties. Lacking a practical way to convert the three dimensional sclerites of genitalic structures (e.g., texture of subterminal apophyses of palpi) into numbers, illustrations will have to be sufficient. Fortunately carefully-made illustrations have proved to be well suited for separation of species.

A dilemma should be mentioned: whether to take apart the genitalia of a rare holotype to improve description, or

leave them undamaged in the hope easier characters will be found.

To make some of the illustrations of palpal parts, embolus, and subterminal apophysis, the palpi were not expanded. Instead I pulled the distal part of the palpus out with needles and on rare occasions removed the conductor.

Living individuals of *Araneus* species have green and red colors, pigments that readily dissolve in alcohol. Colors reported in descriptions are those of alcohol-preserved specimens unless otherwise stated.

Eye sizes were measured by comparing their diameter in profile with that of the anterior median eyes. Their distance from each other of the anterior row was measured by the diameter of the anterior median eyes in profile, from each other of the posterior row by the diameter of the posterior median eyes.

I am skeptical of many localities. The original label may have been misspelled or the locality name changed. Copying the collecting label when sorting may have produced further misspellings. There are obscure abbreviations of many old localities. (In the MCZ, one specimen of *A. trifolium*, common in Massachusetts, was allegedly collected in Fazenda de Secretario Vassouras, Rio de Janeiro, April 1871, by B. P. Mann.) Also, distributions are incomplete as many Neotropical areas have not been collected. It is characteristic of sporadic collecting that the only record of the common *A. venatrix* in Venezuela comes from a difficult-to-reach and out-of-the-way location, Sierra de la Neblina.

### *Araneus* Clerck, 1758

*Araneus* Clerck, 1758: 15. Type species *A. angulatus* Clerck, 1758 (see comment in Levi, 1971: 133 and note below).

*Aranea* Linnaeus, 1758: 619. Type species *A. diadema* Linnaeus.

*Epeira* Walckenaer, 1805: 53. Type species designated by Latreille, 1810: 424. *Aranea diadema* Linnaeus.

*Atea* C. L. Koch, 1837: 3. Type species *Epeira sturmi* (Hahn) designated by Bonnet, 1955: 769.

*Neopora* Simon, 1864: 261. Type species *Aranea diadema* Linnaeus.

*Burgessia* McCook, 1894: 182. Type species *Epeira corticaria* Emerton, designated by Levi, 1971: 133 (as subgenus).

*Neosconella* F. P.-Cambridge, 1904: 474. Type species by original designation *Neosconella stylicera* F. P.-Cambridge.

?*Epeirella* Mello-Leitão, 1941a: 149. The type species by original designation is *Epeirella tucumana* Mello-Leitão with immature holotype [= ?*Araneus vincibilis*].

*Amamrotypus* Archer, 1951a: 17. Type species by original designation *Amamrotypus mammatus* Archer, 1951.

*Euaranea* Archer, 1951a: 34. Type species by original designation *Epeira cavatica* Keyserling (as subgenus).

*Cambridgepeira* Archer, 1951b: 2. Type species by original designation *Epeira detrimentosa* O. P.-Cambridge.

*Conaranaea* Archer, 1951b: 5. Type species by original designation *Epeira excelsa* Banks [= *A. bispinosus* (Keyserling)].

*Mimaranea* Archer, 1951b: 7. Type species by original designation *Aranea triguttata* Fabricius. Named as subgenus of *Conaranaea*.

*Conepeira* Archer, 1951b: 12. Type species by original designation *Epeira miniata* Walckenaer.

**Note.** Although Clerck was published in 1757 (Victory and Cokendolpher, 1989), Art. 3 of the International Code of Zoological Nomenclature, third edition, assigns the arbitrary date 1 January 1758 and directs Clerck as having priority over Linnaeus's *Systema Naturae*, tenth edition.

**Diagnosis.** Females of *Araneus* can be separated from those of other genera by the subspherical to triangular, often hairy, abdomen, which frequently has a pair of anterior humps, and by the epigynum, which has an annulate scape attached to a base (Figs. 1, 2).

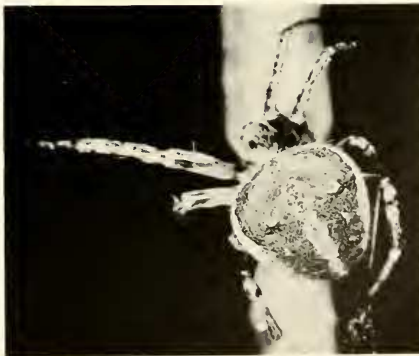
Males of *Araneus* are separated from those of other genera by the structure of the palpus: two patellar setae, a median apophysis with spines or hooks, an apo-

morphy, a conductor close behind sitting on the rim of the tegulum (without basal extension), and the presence of subterminal and terminal apophyses separated by a distal hematodocha from the embolus (Figs. 3, 4, 14). As far as is known, the embolus of a virgin male always has a cap, an apomorphy not found in related genera, which breaks off and lodges in the epigynum when mating (Figs. 77, 84). The cap is often seen attached to the epigynum of mated females (Figs. 435, 445, 466, 477), and may prevent a second mating with another male.

**Description.** The head of *Araneus* females is relatively narrow, the median eyes projecting anteriorly from the laterals. The lateral eyes tend to be smaller than the medians; the anterior or posterior median eyes are the largest. The carapace is usually covered by setae. The first leg is longer than the fourth. The abdomen is spherical to slightly wider than long, sometimes oval, often with a pair of anterior humps (Figs. 12, 442, 480). It usually is hairy in large species, but not so in the small ones.

The epigynum always has an annulate scape. (Only in *A. tigana* is the scape a fused sclerite without rings, Fig. 9.) The scape is attached to the base. Often (as in *A. bogotensis*) the scape is bent on itself, the spoon-shaped end directed posteriorly (Fig. 1). In only some species the scape is torn off, presumably by the male when mating (Fig. 10), preventing later matings with other males. In posterior view, there is a median plate (sclerite) framed by a lateral plate on each side (Fig. 2). The openings are usually ventral in the slit between median and lateral plates, rarely in a round depression.

Plate 1. Upper row, *Araneus workmani*, carapace black with white hair, legs black on translucent white, median band of abdomen with purple-red spots, white patches to side, sides with black and brown marks. Total length 8 mm. Middle row left, *A. omnicalor*, carapace brownish black with white setae, legs black and translucent white, dorsum of abdomen with tiny red stipples, sides with olive, brown, and black. Total length 9 mm. Right, *A. vincibilis*, head black with white setae, legs black on translucent white, abdomen anterior with reddish spots in light area, orange-brown and black marks and some white on sides. Bottom row left *A. unanimus*, carapace, legs, abdomen green, anterior black with yellowish outline and sides red. Total length 7 mm. Right, *A. urubamba*, carapace brown with white setae, legs brown on translucent white, abdomen dark olive-brown on beige, spots orange-brown. Total length 6.5 mm.



The male may be the same size or smaller than the female. The head is always narrower than that of the female. The endite usually has a tooth facing a similar tooth on the palpal femur. The legs are longer than those of the female. The first coxa has a hook on the rim. This hook is absent in the small species, rarely absent in larger ones. The second coxa may have a cone (*A. uniformis*). The coxae never have macrosetae. The second tibia is thicker than the first, usually with some short stout macrosetae. Some small species have the first tibia so modified. The males of some species have neither modified. In males the abdomen is usually oval, slightly pointed behind.

The palpal patella has two setae (*A. cohnae* has only one patellar seta). The palpal tibia in all *Araneus* species has a similar shape: it is conical, enlarged, and bulging on the lateral side when seen in ventral view (Figs. 14, 15). The cymbium of the palpus lacks a tarsal organ. The radix is a lobe of the tegulum (Figs. 3, 4), the median apophysis is the most distinctive feature, with spines on either end. (Unfortunately, its shape and its spines are not necessarily diagnostic for species, although it is useful in separating some otherwise similar species.) Right behind and lateral to the median apophysis is the conductor which sits on the rim of the tegulum. The conductor is white, sometimes sclerotized (in large Nearctic species), flexible, and may have a tooth on its base. In *Araneus*, the conductor never has an extension from its base (As in *Alpaida*, *Wixia*, or *Cyclosa*), and there is no paramedian apophysis. The embolus often has a lamella; embolus and lamella are usually hidden behind the conductor. The subterminal apophysis is usu-

ally a plate, often sculptured. The distal hematodocha separates the subterminal and terminal apophyses from each other and both from the embolus. The terminal apophysis may have small hooks or spines on its tip (Figs. 3, 4, 14). Palpi that have contracted after expanding may not move the terminal apophysis back into its position in the virgin palpus.

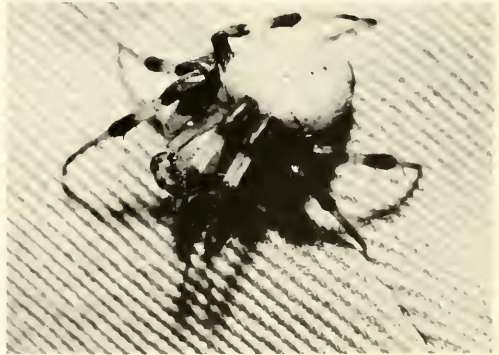
*Species Diagnostic Features of Araneus.* Females of related species generally can be distinguished by the plates in posterior view of the epigynum (Fig. 2). Males usually can be distinguished by the shape of the embolus (Fig. 3) (often hidden by the conductor) but some species have a distinctively shaped median apophysis. Unlike the hidden embolus, the median apophysis is easily seen. Also the sculpturing of the subterminal apophysis appears to be of importance. Because it is heavily sclerotized and black, the subterminal apophysis is also difficult to examine. For new species descriptions the ventral and posterior views of the epigynum have to be illustrated as well as the mesal view of the (left) palpus. Scanning electron micrographs of the terminal or dorsal aspect of palpi, or squashed mounts of the cleared epigynum showing internal ducts are not sufficient. (Both unfortunately are found in recent literature.) Species cannot be separated by the color pattern of the abdomen (exceptions here are *A. venatrix* and a few other species). Attempts to separate species by proportions or macrosetae count is wasting time (Berman and Levi, 1971; Carmichael, 1973; Levi, 1973). Also leg length appears quite variable within species and cannot be used to diagnose species, although it is useful information. *Araneus* specimens often have regenerated

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Plate 2. Upper row left, *Araneus venatrix* (Rio de Janeiro), carapace dark brown, legs red-brown and transparent white, abdomen with red and black spots, greenish-white on sides, posterior black transverse bars. Total length 12 mm. Right, web of *A. iguacu*, 11 cm horizontal diameter. Middle row left, *A. guttatus* (Panama), carapace black, legs black and brown, abdomen white with black marks. Total length 8 mm. Right, *A. iguacu*, legs black and translucent white, abdomen white with green patches and black marks. Total length 4.5 mm. Bottom row left, *A. tijuca*, carapace orange, legs dark orange and black, abdomen green, posterior black with white outline. Total length 6 mm. Right, *Dubiepeira dubitata*, carapace translucent white with a black line, legs black on transparent white, abdomen bright green. Total length 12 mm.





legs, which are smaller than non-regenerated legs.

*Natural History.* Large *Araneus* females make a retreat in a rolled leaf or in bark or lichens and have a signal line going to the center of the large orb web (Levi, 1971, 1973). Small species may inhabit tree crowns. Difficulty in collecting may be the reason for the rarity of many species in collections. Many species living in shrubs are easiest to collect by unrolling leaves. Males of all species are sometimes collected with females of a different species.

*Relationship.* *Araneus* is related to other araneid genera that have an annulate scape in the epigynum, that lack a paramedian apophysis, whose conductor sits on the rim of the tegulum behind the median apophysis, and that have a terminal and a subterminal apophyses. These genera include *Aculepeira* (which has a pointed scape and oval abdomen), *Kaira* (which has cauliflower-shaped structures on the abdomen), *Larinia* (which has an oval elongate abdomen), *Metazygia* (which has a projecting club-shaped median apophysis), *Metepeira* (which has small male and female genitalia and a median apophysis with two flagella), *Nuctenea* (which has only a small hematodocha between terminal and subterminal apophysis, and an oval flattened abdomen), *Cercidia*, and others. The conductor of *Cercidia* is away from the rim. *Araneus* is not close to *Alpaida*, *Wixia*, *Eriophora*, *Molinaranea*, *Cyclosa*, and others that have a paramedian apophysis. (More on the relationships of araneid genera is in preparation.)

Within *Araneus*, the species that have two spines on the proximal end of the median apophysis (Figs. 3, 10) are the primitive ones, as semblance of this shape is found in other genera: *Aculepeira*, modified in *Metepeira*, *Kaira*, and *Larinia*. The greatest diversity of the median apophysis is found in the many small species, which probably evolved from larger ancestors. The many large Neotropical species are also very similar and perhaps closer to *Araneus marmoreus* Clerck because of the similarly shaped median apophysis. The

large Nearctic species are more specialized than the larger Neotropical species, judging by the often sclerotized, modified conductor and diversity in the shape of the median apophysis. The epigynum of *Araneus marmoreus* has basal lamellae not found in South American species. But indication of such lamellae are found in some large individuals of species that otherwise do not have this structure. As in the larger South American species, *A. marmoreus* has an embollar lamella (Levi, 1971, fig. 6).

I have been unable to find good characters other than size that split off the group of many small species. As is characteristic in spiders and perhaps other animals, the tiny species show a greater diversity in body shape and genitalia. The two small species *A. sturmi* (Hahn), *A. triguttatus* (Fabricius) found in Europe are often placed in the genus *Atea*.

*Distribution.* *Araneus* species are mainly Holarctic, but may be found world-wide except perhaps in Australia and New Zealand. The species described from Africa, south of the Sahara, all may belong to other genera (personal communication M. Grasshoff).

Most *Araneus* species are Nearctic and Central American (Map 1). Next in showing an abundance of species are eastern Brazil and the Andes (Map 1). Related species have often similar distributions (e.g., the large species of eastern Brazil, the species found in Chile, and *A. venatrix*, *A. guttatus*). The greatest diversity in structure of genitalia and appearance is found among the small species of Mexico and Central America, most similar are the species of southern South America.

#### Misplaced and Unrecognizable Neotropical Species

The correct placement of *Araneus* nominal species that do not belong in *Araneus* (or in *Dubiepeira* or *Aculepeira*) is provided in the two lists below. (The lists were prepared from the catalogs of Roewer, 1942, and Brignoli, 1983.) The literature citations for these names can be found in the catalogs and are not repeated here.

Many misplaced species belong in unnamed, new genera. They will be named in future papers. The names of some misplaced species may be junior synonyms of older names.

### Misplaced Species

- Acrosoma transitoria* C. L. Koch, 1839: 119, pl. 518, ♀; belongs in *Wagneriana*.
- Acrosoma tumida* Taczanowski, 1879: 120, pl. 1, fig. 34, ♀; belongs in *Wixia*.
- Aranea bicolorata* Roewer, 1942: 837, new name for *Epeira bicolor* C. L. Koch, 1839, preoccupied by *Epeira bicolor* Walckenaer, 1802; is a *Parawixia*.
- Aranea citrinella* Roewer, 1942: 839, new name for *Epeira citrina* Keyserling, 1892, erroneously thought by Roewer to be preoccupied by *Aranea citrina* Fourcroy, 1785 = *Alpaida citrina*.
- Aranea conformis* Roewer, 1942: 839, new name for *Alpaida conica* O. P.-Cambridge, 1889, erroneously thought by Roewer to be preoccupied by *Aranea conica* Pallas, 1772 = *Alpaida conica*.
- Aranea cylindriformis* Roewer, 1942: 840, new name for *Epeira cylindrica* O. P.-Cambridge, 1889, preoccupied by *Epeira cylindrica* Taczanowski, 1878; is a linyphiid.
- Aranea dilatata* F. P.-Cambridge, 1904: 513, pl. 49, fig. 9, ♂; belongs in *Metazygia*.
- Aranea errans* Roewer, 1942: 841, new name for *Epeira erratica* Keyserling, 1883, erroneously thought by Roewer to be preoccupied by *Aranea erratica* Olivier, 1789; is a *Bertrana*.
- Aranea febrigi* Dahl, 1906: 735; belongs in *Wixia*.
- Aranea gracilenta* Roewer, 1942: 843, new name for *Epeira gracilis* Keyserling, 1865, preoccupied by *Epeira gracilis* Walckenaer, 1805 = *Argiope argentata* (Fabricius). NEW SYNONYMY.
- Aranea hirtipedata* Roewer, 1942: 844, new name for *Epeira hirtipes* Taczanowski, 1878, erroneously thought by Roewer to be preoccupied by *Aranea hirtipes* Fabricius, 1775; belongs in *Mangora*.
- Aranea latro* Fabricius, 1775: 412 = *Alpaida latro*.
- Aranea mundulella* Strand, 1915: 114; belongs in *Metazygia*.
- Aranea nigrocincta* F. P.-Cambridge, 1904: 513, pl. 49, figs. 11, 12, ♀, ♂; belongs in an unnamed genus.
- Aranea nigropunctatula* Roewer, 1942: 848, new name for *Epeira nigropunctata* Taczanowski, 1878, preoccupied by *Epeira nigropunctata* L. Koch, 1871 = *Alpaida calotypa* (Chamberlin).
- Aranea ocellatula* Roewer, 1942: 849, new name for *Epeira ocellata* O. P.-Cambridge, 1889: 29, erroneously thought by Roewer to be preoccupied by *Aranea ocellata* Linn., 1758. The type is an early instar, probably of *Eriophora ravilla* (C. L. Koch).
- Aranea orina* Chamberlin, 1916: 248, pl. 4, fig. 3, ♂; belongs in *Eustala*.
- Aranea roemeri* Strand, 1908: 3 = *Alpaida roemeri*.



Map 1. Approximate number of species of *Araneus* in different areas.

- Aranea santa* Chamberlin, 1916: 254, pl. 19, fig. 10, ♀; belongs in *Metepeira*.
- Aranea tatarendensis* Tullgren, 1905: 34, pl. 5, fig. 12, ♀ = *Wixia tatarendensis* (Tullgren). NEW COMBINATION.
- Aranea trisignata* Roewer, 1942: 854, new name for *Epeira trilineata* Taczanowski, 1878: 162, erroneously thought by Roewer to be preoccupied by *Aranea trilineata* Linn., 1767 = *Alpaida trilineata*.
- Aranea viridipedata* Roewer, 1942: 856, new name for *Epeira viridipes* Taczanowski, 1878: 155, preoccupied by *Epeira viridipes* Doleschall, 1859; belongs in *Eustala*.
- Araneus acacesiformis* di Caporiacco, 1954: 108, fig. 27, ♀; is an immature *Eriophora nephiloides* (O. P.-Cambridge). NEW SYNONYMY.
- Araneus akeholmi* Brignoli, 1983: 262, new name for *A. holmi* di Caporiacco, 1955, preoccupied by *Araneus holmi* Schenkel, 1953; is *Wixia tatarendensis* (Tullgren). NEW SYNONYMY.
- Araneus albisecta* Mello-Leitão, 1936: 127, pl. 15, ♀; belongs in *Molinaranea*.
- Araneus argyronotus* Mello-Leitão, 1939: 111; is an immature *Eriophora edax* (Blackwall). NEW SYNONYMY.
- Araneus aysenensis* Tullgren, 1902: 32, pl. 3, fig. 4, ♀; belongs in *Molinaranea*.
- Araneus borellii* Simon, 1897: 6 = *Alpaida veniliae* (Keyserling).
- Araneus calotypa* Chamberlin, 1916: 256, pl. 19, fig. 4, ♂ = *Alpaida calotypa*.
- Araneus carteri* Badcock, 1932: 25, fig. 17; ♀, ♂ = *Alpaida alticeps* (Keyserling).
- Araneus castaneoscutatus* Simon, 1895: 806; belongs in *Metazygia*.
- Araneus collusor* Petrunkevitch, 1911: 285, new name for *Heterognatha chilensis* Nicolet, 1849, errone-

- ously thought by Petrunkevitch to be preoccupied by *Epeira chilensis* Nicolet, 1849; belongs in *Heterognatha*, probably Mimetidae.
- Araneus compsa* Chamberlin, 1916: 252, pl. 19, fig. 6, ♀; belongs in *Metepeira*.
- Araneus cylicophorus* Badcock, 1932: 26, fig. 18, ♀; belongs in *Verrucosa*.
- Araneus cyrtophoroides* F. P.-Cambridge, 1904: 518, pl. 51, fig. 4, ♀ = *Cyrtophora nympa* Simon. NEW SYNONYMY.
- Araneus designatus* Chamberlin and Ivie, 1936: 51, pl. 14, figs. 126, 127, ♀; is an immature *Alpaida bicornuta* (Taczanowski).
- Araneus duocupha* Chamberlin, 1916: 256, pl. 18, figs. 8-10, ♀; the holotype is probably a *Wixia*.
- Araneus eriphoroides* di Caporiacco, 1954: 111, fig. 29, ♂. Type lost (not in MNHN, MZUF); belongs in *Parawixia*.
- Araneus flavosellata* Simon, 1895: 824. No specimen with this name in MNHN. It might be *Bertrana flavosellata* Simon, 1893: 326.
- Araneus fuliginus rhomboidalis* Franganillo Balboa, 1930 = ?*Eriophora ravilla* (C. L. Koch).
- Araneus fuliginus sanguineus* Franganillo Balboa, 1930 = ?*Eriophora ravilla* (C. L. Koch).
- Araneus globigera* Hogg, 1913: 39, pl. 1, fig. 4, ♂; belongs in *Molinaranea*.
- Araneus holmi* di Caporiacco, 1955: 354; is *Wixia tatarandensis* (Tullgren). NEW SYNONYMY.
- Araneus inexplicabilis* Badcock, 1932: 38, fig. 16, ♀ = *Alpaida rubellula* (Keyserling).
- Araneus mammifera* Tullgren, 1902: 34, pl. 3, fig. 5, ♀; belongs in *Molinaranea*.
- Araneus manicatus* Simon, 1895: 822 = *Alpaida manicata*.
- Araneus moatus* Chamberlin and Ivie, 1936: 47, pl. 14, fig. 125 = *Alpaida moata*.
- Araneus multipunctatus* Simon, 1895: 815 = *Alpaida tabula* (Simon).
- Araneus mutata* Chamberlin and Ivie, 1936: 46, pl. 14, figs. 128, 129, ♀ = *Alpaida truncata* (Keyserling).
- Araneus neotheis* Petrunkevitch, 1911: 305, for *Epeira theisii*:—Keyserling, 1893, misidentification = *Neoscona moreli* (Vinson).
- Araneus nigrofrenata* Simon, 1895: 816 = *Alpaida nigrofrenata*.
- Araneus nigrolineatus* di Caporiacco, 1955: 357, fig. 263, ♀; belongs in *Acacesia*.
- Araneus nordenskjöldii* Tullgren, 1905: 29, pl. 3, fig. 9, pl. 4, fig. 9, ♀, ♂; belongs in *Parawixia*.
- Araneus paraopeba* Mello-Leitão, 1917: 92, fig. 10, ♀; belongs in *Parawixia*.
- Araneus patagonica* Tullgren, 1901: 218; belongs in *Molinaranea*.
- Araneus perperus* Petrunkevitch, 1911: 309, new name for *Epeira perplexa* Banks, 1898: 251, preoccupied by *Epeira perplexa* Walckenaer, 1842 = *Carepalxis perpera*. NEW COMBINATION.
- Araneus phætontis* Simon, 1896: 67; belongs in *Molinaranea*.
- Araneus quadrilatoratus* Simon, 1897: 5 = *Alpaida quadrilatorata*.
- Araneus riberoi* Mello-Leitão, 1917: 89; belongs in *Parawixia*.
- Araneus riveti* Berland, 1913: 92, pl. 9, figs. 42, 43, ♀. Holotype lost (not in MNHN); belongs in an unnamed genus.
- Araneus rugosa* Badcock, 1932: 24; belongs in *Parawixia*.
- Araneus sandrei* Simon, 1895: 816 = *Alpaida sandrei*.
- Araneus sermonifera* Mello-Leitão, 1932: 124, new name for *Araneus socialis*:—Burmeister, 1872: 492, misidentification; belongs in *Parawixia*.
- Araneus setospinosa* Chamberlin and Ivie, 1936: 48, pl. 14, fig. 124, ♀ = *Cyrtophora nympa* Simon. NEW SYNONYMY.
- Araneus surcolorum* Simon, 1896: 67; belongs in *Molinaranea*.
- Araneus tabula* Simon, 1895: 815, fig. 867, ♀ = *Alpaida tabula*.
- Araneus taczanowskii* Simon, 1896: 473 = *Alpaida delicata* (Keyserling).
- Araneus trigonellus* di Caporiacco, 1954: 107, fig. 26, ♀; belongs in *Wixia*.
- Araneus trinitatis* Hogg, 1918: 166; belongs in *Eustala*.
- Araneus tristimoniae* Petrunkevitch, 1911: 320, new name for *Epeira tristis* Taczanowski, 1873: 131, preoccupied by *Epeira tristis* Blackwall, 1862 = *Neoscona nautica* (L. Koch).
- Araneus tuonabo* Chamberlin and Ivie, 1936: 50, pl. 14, fig. 1230, ♀ = *Alpaida tuonabo*.
- Araneus vallengini* Hogg, 1913: 37, pl. 1, fig. 3, ♀; belongs in *Molinaranea*.
- Araneus wenzeli* Simon, 1897: 874 = *Alpaida wenzeli*.
- Araniella geayi* di Caporiacco, 1954: 104, fig. 24, ♀; is an immature *Eriophora edax* (Blackwall).
- Atea lewisi* Archer, 1958: 17, figs. 39, 40, ♀; belongs in an unnamed genus.
- Epeira acuta* Keyserling, 1965: 816, pl. 18, figs. 13, 14, ♀ = *Alpaida acuta*.
- Epeira adiantoides* Taczanowski, 1878: 148, pl. 1, fig. 4, ♀, ♂ = *Neoscona oaxacensis* (Keyserling).
- Epeira aestimabilis* Keyserling, 1892: 181, pl. 9, fig. 133, ♀, ♂ = *Alpaida championi* O. P.-Cambridge.
- Epeira albiventer* Keyserling, 1884: 651, pl. 21, fig. 3, ♀; belongs in *Eustala*.
- Epeira bicolor* C. L. Koch, 1839: 57, pl. 374, ♀; preoccupied by Walckenaer, 1802; is a *Parawixia*.
- Epeira bicornuta* Taczanowski, 1878: 168, pl. 2, fig. 18, ♀, ♂ = *Alpaida bicornuta*.
- Epeira carminea* Taczanowski, 1878: 163, pl. 2, fig. 14, ♀ = *Alpaida carminea*.
- Epeira caudacuta* Taczanowski, 1873: 136, pl. 5, fig. 16, ♀; belongs in *Mecynometa*.
- Epeira championi* O. P.-Cambridge, 1889: 42, pl. 5, figs. 12, 13, ♀, ♂ = *Alpaida championi*.
- Epeira chilensis* Nicolet, 1849: 487; belongs in *Molinaranea*.

- Epeira cinaberina* Nicolet, 1849: 490, pl. 5, fig. 9, ♀; belongs in *Molinaranea*.
- Epeira citrina* Keyserling, 1892: 88, pl. 4, fig. 66, ♀ = *Alpaida citrina*.
- Epeira clymene* Nicolet, 1849: 503; belongs in *Molinaranea*.
- Epeira conseqa* O. P.-Cambridge, 1889: 36; belongs in *Wixia*.
- Epeira cooksonii* Butler, 1877: 76, pl. 13, fig. 2, ♀ = *Neoscona oaxacensis* (Keyserling).
- Epeira coronigera* Taczanowski, 1878: 157, pl. 1, fig. 9, ♀; belongs in *Parawixia*.
- Epeira cylindrica* O. P.-Cambridge, 1889: 19, pl. 7, figs. 12, 13, ♀, ♂; preoccupied by Taczanowski, 1878; is a linyphiid.
- Epeira davisii* Hingston, 1932: 365 = *Cyrtophora guianensis* (Keyserling). NEW SYNONYMY.
- Epeira delicata* Keyserling, 1892: 183, pl. 9, fig. 135, ♀, ♂ = *Alpaida delicata*.
- Epeira deliciosa* Keyserling, 1893: 234, pl. 11, fig. 174, ♀, ♂ = *Alpaida carminea* Taczanowski, 1878.
- Epeira dstricta* O. P.-Cambridge, 1889: 39, pl. 4, fig. 14; belongs in *Wixia*.
- Epeira dubia* Keyserling, 1863: 123, pl. 4, figs. 12, 13, ♀; belongs in *Metazygia*.
- Epeira electa* Keyserling, 1883: 196, pl. 16, fig. 2, ♂; belongs in *Kaira*.
- Epeira elinguis* Keyserling, 1883: 198, pl. 15, fig. 4, ♀; belongs in *Bertrana*.
- Epeira erratica* Keyserling, 1883: 197, pl. 15, fig. 3, ♀; belongs in *Bertrana*.
- Epeira erudita* Nicolet, 1849: 504; belongs in *Molinaranea*.
- Epeira essequibensis* Hingston, 1932: 366; belongs in *Wixia*.
- Epeira flaviventris* Nicolet, 1849: 494; belongs in *Molinaranea*.
- Epeira floridensis* Banks, 1904: 129, pl. 7, fig. 5, ♀ = *Araneus miniatus* (Walckenaer).
- Epeira fulginea* C. L. Koch, 1839: 58, pl. 375, ♀ = *Eriophora fulginea*.
- Epeira galathea* Thorell, 1891: 53; belongs in *Meteteira*.
- Epeira genialis* Keyserling, 1892: 156, pl. 8, fig. 114, ♀; belongs in *Metazygia*.
- Epeira glomerabilis* Keyserling, 1892: 154, pl. 8, fig. 113, ♀, ♂; belongs in *Metazygia*.
- Epeira gracilis* Keyserling, 1865: 826, pl. 19, figs. 29, 30, ♂, preoccupied by Walckenaer, 1805 = *Argiope argentata* (Fabricius). NEW SYNONYMY.
- Epeira graphica* O. P.-Cambridge, 1889: 22, pl. 7, fig. 16, ♂ = *Alpaida graphica*.
- Epeira grayii* Blackwall, 1863: 34, = *Alpaida grayi*.
- Epeira gressa* Keyserling, 1892: 166, pl. 8, fig. 123, ♀; belongs in *Meteteira*.
- Epeira gundlachi* Banks, 1914: 641, pl. 43, fig. 8, ♀; probably belongs in *Larinia*.
- Epeira helvola* O. P.-Cambridge, 1889: 24, pl. 5, figs. 1, 2, ♀, ♂; belongs in *Metazygia*.
- Epeira hirtipes* Taczanowski, 1878: 164, pl. 2, fig. 15, ♀, ♂; belongs in *Mangora*.
- Epeira hispida* C. L. Koch, 1845: 889 = *Eriophora fulginea* (C. L. Koch). NEW SYNONYMY.
- Epeira hispida* Nicolet, 1849: 505; belongs in *Molinaranea*.
- Epeira hyadesi* Simon, 1884: 121, pl. 3, figs. 5, 6, ♀; belongs in an unnamed genus.
- Epeira incerta* O. P.-Cambridge, 1889: 23, pl. 4, fig. 15, ♀; belongs in *Metazygia*.
- Epeira inflata* Nicolet, 1849: 504; belongs in *Molinaranea*.
- Epeira jelskii* Taczanowski, 1873: 139, pl. 5, fig. 17, ♀, ♂; belongs in *Wagneriana*.
- Epeira kochii* Taczanowski, 1873: 134; is probably a *Parawixia*.
- Epeira lamentaria* Keyserling, 1883: 199; belongs in an unnamed genus.
- Epeira laticeps* O. P.-Cambridge, 1889: 18, pl. 4, fig. 16, ♀; belongs in an unnamed genus close to *Metazygia*.
- Epeira messalina* Hasselt, 1888: 181, pl. 6, figs. 1, 2, ♀ = *Eriophora fulginea* (C. L. Koch).
- Epeira minas* Keyserling, 1892: 95, pl. 5, fig. 71, ♀, ♂; belongs in *Parawixia*.
- Epeira monticola* Keyserling, 1892: 94, pl. 4, fig. 70, ♀; belongs in *Parawixia*.
- Epeira musiva* Hasselt, 1889: 184, pl. 5, figs. 5-7, ♀ = *Eriophora nephiloides* (O. P.-Cambridge). NEW SYNONYMY.
- Epeira nicaraguensis* Keyserling, 1885: 532, pl. 13, fig. 31, ♀ = *Eriophora ravilla* (C. L. Koch).
- Epeira nigrata* Nicolet, 1849: 504; belongs in *Molinaranea*.
- Epeira nigriventris* Taczanowski, 1878: 151, pl. 1, fig. 6, ♀, ♂; belongs in *Meteteira*.
- Epeira nigropunctata* Taczanowski, 1878: 167, pl. 2, fig. 17, ♀, ♂, preoccupied by L. Koch, 1871 = *Alpaida calotypa* (Chamberlin).
- Epeira nigropustulata* O. P.-Cambridge, 1893: 111, pl. 15, fig. 5 = *Alpaida truncata* (Keyserling).
- Epeira ocellata* O. P.-Cambridge, 1889: 29. The type is an early instar, probably of *Eriophora ravilla* (C. L. Koch).
- Epeira pallidula* Keyserling, 1863: 124, pl. 4, figs. 14, 15, ♀; belongs in *Metazygia*.
- Epeira pantherina* Taczanowski, 1872: 132 = *Alpaida veniliae* (Keyserling).
- Epeira perplexa* Banks, 1898: 251, preoccupied by Walckenaer, 1842; belongs in *Carepalxis*.
- Epeira punctipes* Taczanowski, 1878: 166, pl. 2, fig. 16, ♀; belongs in *Mangora*.
- Epeira reptilis* Keyserling, 1892: 244, pl. 12, fig. 182, ♂ = *Araneus pratensis* Emerton.
- Epeira rhodomelas* Taczanowski, 1878: 147, pl. 1, fig. 3, ♀ = *Alpaida acuta* (Keyserling).
- Epeira rivalis* Keyserling, 1892: 103, pl. 5, fig. 76, ♀. Holotype lost (not in BMNH, USNM); probably belongs in *Parawixia*.
- Epeira rostrata* Keyserling, 1893: 230, pl. 11, fig. 171, ♀; belongs in *Mangora*.
- Epeira rostratula* Keyserling, 1892: 82, pl. 4, fig. 62, ♂ = *Alpaida rostratula*.

- Epeira rubellula* Keyserling, 1892: 81, pl. 4, fig. 61, ♀ = *Alpaida rubellula*.
- Epeira salei* Keyserling, 1863: 93, pl. 4, figs. 10, 11, ♀; belongs in *Metepeira*.
- Epeira seditiosa* Keyserling, 1893: 212, pl. 10, fig. 157, ♂; belongs in *Metepeira*.
- Epeira septemmammata* O. P.-Cambridge, 1889: 42, pl. 7, fig. 6, ♀ = *Alpaida septemmammata*.
- Epeira simplicissima* Keyserling, 1883: 203, pl. 15, fig. 8, ♀; belongs in *Metazygia*.
- Epeira singularis* Banks, 1898: 252, pl. 15, fig. 4, ♀ = *Neoscona arabesca* (Walckenaer).
- Epeira spinigera* O. P.-Cambridge, 1889: 43, pl. 5, figs. 9, 10, ♀ = *Alpaida bicornuta* (Taczanowski).
- Epeira spinosa* Taczanowski, 1873: 141, pl. 5, fig. 18, ♂; belongs in *Wagneriana*.
- Epeira strenua* Keyserling, 1893: 257; belongs in *Mangora*.
- Epeira thalia* Nicolet, 1849: 503; belongs in *Molinaranea*.
- Epeira theisii*—Keyserling, 1893: 246, pl. 12, fig. 184, ♀, misidentification = *Neoscona morela* (Vinson).
- Epeira trapezoides* Karsch, 1879: 107 = *Eriophora fuliginea* (C. L. Koch).
- Epeira trilineata* Taczanowski, 1878: 162, pl. 2, fig. 13, ♀ = *Alpaida trilineata*.
- Epeira trispinosa* Keyserling, 1892: 78, pl. 4, fig. 59, ♀, ♂ = *Alpaida trispinosa*.
- Epeira tristis* Taczanowski, 1873: 131, preoccupied by Blackwall, 1862 = *Neoscona nautica* (L. Koch).
- Epeira tubulifaciens* Hingston, 1932: 366; belongs in *Spilasma*.
- Epeira unguiformis* Keyserling, 1893: 237, pl. 11, fig. 177, ♀ = *Alpaida veniliae* (Keyserling).
- Epeira ursina* Keyserling, 1865: 822, pl. 19, figs. 3–5, ♀ = *Eriophora fuliginea* (C. L. Koch).
- Epeira variabilis* Keyserling, 1863: 126, pl. 6, figs. 1–4, ♀, ♂ = *Alpaida variabilis*.
- Epeira velutina* Taczanowski, 1878: 159, pl. 1, fig. 10, ♀; belongs in *Parawixia*.
- Epeira veniliae* Keyserling, 1865: 817, pl. 19, fig. 23, ♀, ♂ = *Alpaida veniliae*.
- Epeira venustula* Keyserling, 1879: 308, pl. 4, fig. 11, ♀, ♂; belongs in *Wixia*.
- Epeira verecunda* Keyserling, 1865: 824, pl. 19, figs. 14–16, ♀, ♂; is probably a *Wixia*. (Both palpi lost from type specimen.)
- Epeira vigilax* Keyserling, 1893: 211, pl. 10, fig. 156, ♂; belongs in *Metepeira*.
- Epeira viridipes* Taczanowski, 1878: 155, pl. 1, fig. 8, ♀, ♂; belongs in *Eustala*.
- Epeira virtosa* Keyserling, 1892: 165, pl. 8, fig. 122, ♀; belongs in an unnamed genus.
- Epeira voluptifica* Keyserling, 1892: 152, pl. 7, fig. 112, ♀, ♂; belongs in *Metazygia*.
- Epeira zelotypa* Keyserling, 1883: 202, pl. 15, fig. 7, ♀ = *Chrysometa zelotypa*.
- Epeira ziloides* Banks, 1898: 255, pl. 15, fig. 2, ♀, ♂; belongs in *Metazygia*.
- Epeirella albocincta* Mello-Leitão, 1948: 169, fig. 11, ♂ = *Alpaida albocincta*.
- Epeiroides albonotatus* Mello-Leitão, 1945: 237; is *Alpaida truncata* (Keyserling.)
- Epeiroides bahiensis* Keyserling, 1885: 524, pl. 13, fig. 23, ♀; stays in original genus *Epeiroides*.
- Epeiroides fasciolata* O. P.-Cambridge, 1889: 15, pl. 8, fig. 5, ♂; belongs in *Mastophora*.
- Epeiroides lamprus* Soares and Camargo, 1948: 370, figs. 23, 24, ♀; belongs in *Verrucosa*.
- Heterognatha chilensis* Nicolet, 1849: 470, pl. 5, fig. 3, ♀; probably belongs in *Mimetidae*.
- Heterognatha margaritacea* Nicolet, 1849: 471; probably belongs in *Mimetidae*.
- Mahadeva undulata* Keyserling, 1892: 67, pl. 3, fig. 52, ♀; belongs in *Parawixia*.
- Mahadeva zebra* Keyserling, 1892: 68, pl. 3, fig. 53, ♀ = *Verrucosa zebra*. NEW COMBINATION.
- Molinaranea setosa* Mello-Leitão, 1948: 169; belongs in *Parawixia*.
- Neoscona conifera* F. P.-Cambridge, 1904: 409, pl. 44, figs. 6, 7, ♀, ♂ = *Neoscona oaxacensis* (Keyserling).
- Neoscona minima* F. P.-Cambridge, 1904: 471, pl. 44, figs. 11, 12 = *Neoscona arabesca* (Walckenaer).
- Tricantha albopunctata* Taczanowski, 1879: 123; belongs in *Wixia*.

### Unrecognizable Names

The unrecognizable names are those of species described by Walckenaer, Nicolet, Blackwall, Franganillo, early Mello-Leitão, and Hingston, authors who did not illustrate the genitalia of the species they named, and did not leave well-marked specimens in a museum. These same authors made inadvertent homonyms which were subsequently replaced by Petrunkevitch (1911), Roewer (1942), and Brignoli (1983) in their catalogs. Thus, a number of these doubtful nominal species have two names. Also included here are some names of other authors whose types have been lost.

- Aranea affinitata* Roewer, 1942: 836, new name for *Epeira affinis* Nicolet, 1849, preoccupied by *E. affinis* Blackwall, 1846.
- Aranea crux* Roewer, 1942: 840, new name for *Epeira cruciata* Nicolet, 1849, preoccupied by *E. cruciata* Walckenaer, 1805.
- Aranea depressata* Roewer, 1942: 841, new name for *Epeira depressa* Walckenaer, 1841, erroneously thought by Roewer to be preoccupied by *Aranea depressa* Razoumowsky, 1789.
- Aranea dorsatula* Roewer, 1942: 841, new name for

- Epeira dorsalis* Nicolet, 1849, erroneously thought by Roewer to be preoccupied by *Aranea dorsalis* Fabricius, 1775.
- Aranea elegantula* Roewer, 1942: 841, new name for *Epeira elegans* Blackwall, 1862, erroneously thought to be preoccupied by *Aranea elegans* Meyer, 1790.
- Aranea minutella* Roewer, 1942: 847, new name for *Epeira minuta* Nicolet, 1849, erroneously thought by Roewer to be preoccupied by *Aranea minuta* Meyer, 1790.
- Aranea mundatula* Roewer, 1942: 847, new name for *Epeira munda* Blackwall, 1863, preoccupied by *Epeira munda* C. L. Koch, 1836.
- Aranea perfoliatus* Franganillo Balboa, 1930.
- Aranea quadrimaculosa* Roewer, 1942: 850, new name for *Epeira quadrimaculata* Nicolet, 1849: 507, erroneously thought by Roewer to be preoccupied by *Aranea quadrimaculata* De Geer, 1778.
- Aranea quadripunctatula* Roewer, 1942: 850, new name for *Epeira quadripunctata* Nicolet, 1849, erroneously thought by Roewer to be preoccupied by *Aranea quadripunctata* Linn., 1758.
- Aranea rapaxata* Roewer, 1942: 850, new name for *Epeira rapax* Blackwall, 1863, erroneously thought by Roewer to be preoccupied by *Aranea rapax* Fabricius, 1798.
- Araneus advena* Petrunkevitch, 1911: 277, new name for *Epeira adianta* Nicolet, 1849: 488, preoccupied by *Epeira adianta* Walckenaer, 1802.
- Araneus aequiangulus ochraceus* Franganillo Balboa, 1936: 70.
- Araneus anuncinatus depilosus* Franganillo Balboa, 1930: 29.
- Araneus balboae* Brignoli, 1983: 262, new name for *Aranea conicus* Franganillo Balboa, 1946, preoccupied by *Aranea conica* Pallas, 1772.
- Araneus bormensis* Berland, 1913: 94, pl. 9, figs. 46, 47, ♀.
- Araneus bourguyi* Mello-Leitão, 1915: 135.
- Araneus conicus* Franganillo Balboa, 1946: 97, figs. 1, 2, ♀.
- Araneus consimilis* Mello-Leitão, 1915: 133.
- Araneus contestationis* di Caporiacco, 1954: 105, fig. 25, ♀. Type lost (not in MNHN, MZUF).
- Araneus franganillianus* Brignoli, 1983: 262, new name for *Araneus niger* Franganillo Balboa, 1936, preoccupied by *Araneus niger* Lister, 1778.
- Araneus franganilloides* Brignoli, 1983: 262, new name for *Araneus rugosus* Franganillo Balboa, 1936: 75, preoccupied by *Araneus rugosus* Badcock, 1932.
- Araneus intrepida* Mello-Leitão, 1915: 104.
- Araneus itatiaiae* Mello-Leitão, 1915: 133.
- Araneus nephiloides trapezoidalis* Franganillo Balboa, 1930.
- Araneus niger* Franganillo Balboa, 1936: 73.
- Araneus nigrocellatus* di Caporiacco, 1954: 110, fig. 28. Type lost (not in MNHN, MZUF).
- Araneus petri* Simon, 1897: 6. Holotype at University of Torino destroyed in Second World War.
- Araneus rugosus* Franganillo Balboa, 1936: 75, fig. 33, ♀.
- Araneus sulphureus* Franganillo Balboa, 1930: 29.
- Epeira adianta* Nicolet, 1849: 483.
- Epeira affinis* Nicolet, 1849: 498, preoccupied by Blackwall, 1846.
- Epeira astuta* Blackwall, 1863: 36.
- Epeira bicaudata* Nicolet, 1849: 510.
- Epeira carenata* Nicolet, 1849: 509.
- Epeira cauta* Walckenaer, 1841: 35.
- Epeira cruciata* Nicolet, 1849: 494, preoccupied by Walckenaer, 1805.
- Epeira decaspina* Taczanowski, 1873: 143. Holotype lost in PAN.
- Epeira depressa* Walckenaer, 1841: 134.
- Epeira dorsalis* Nicolet, 1849: 499.
- Epeira elegans* Blackwall, 1862: 431.
- Epeira flavifrons* Nicolet, 1849: 507.
- Epeira foliolicans* Hingston, 1932: 367.
- Epeira folitsecens* Hingston, 1932: 364.
- Epeira fuliginosa* Walckenaer, 1841: 41.
- Epeira fumida* Blackwall, 1862: 433.
- Epeira grammica* Blackwall, 1862: 434.
- Epeira immunda* Nicolet, 1849: 510.
- Epeira lepida* Blackwall, 1862: 430.
- Epeira lodiculafaciens* Hingston, 1932: 365.
- Epeira luteola* Blackwall, 1862: 435.
- Epeira magellanica* Walckenaer, 1847: 467.
- Epeira minuta* Nicolet, 1849: 508.
- Epeira moraballii* Hingston, 1932: 363.
- Epeira mucronata* Blackwall, 1862: 438.
- Epeira multiguttata* Blackwall, 1862: 432.
- Epeira munda* Blackwall, 1863: 33.
- Epeira naevia* Nicolet, 1849: 499.
- Epeira nidificans* Hingston, 1932: 367.
- Epeira obliterated* Nicolet, 1849: 496.
- Epeira perplexa* Walckenaer, 1841: 101.
- Epeira prostypa* Walckenaer, 1841: 136.
- Epeira quadrimaculata* Nicolet, 1849: 507.
- Epeira quadripunctata* Nicolet, 1849: 495.
- Epeira rapax* Blackwall, 1863: 22.
- Epeira sacculifaciens* Hingston, 1932: 364.
- Epeira scitula* Blackwall, 1863: 37.
- Epeira spira* Walckenaer, 1841: 80.
- Epeira transversalis* Nicolet, 1849: 493.
- Epeira valdiviensis* Nicolet, 1849: 506.
- Epeira viridipes* Taczanowski, 1878: 155.

### Keys for *Araneus* species

The keys presented here do not include the three species *A. andrewsi*, *A. gemmoides*, and *A. montereyensis*, with distributions mainly north of Mexico, but some records in Baja California Norte.

There were problems in making keys. The females of some species have the scape torn off the diagnostic epigynum when mating. Thus they may be collected with or without scape (usually without), but in-

dividuals with the scape are not found in the available collections.

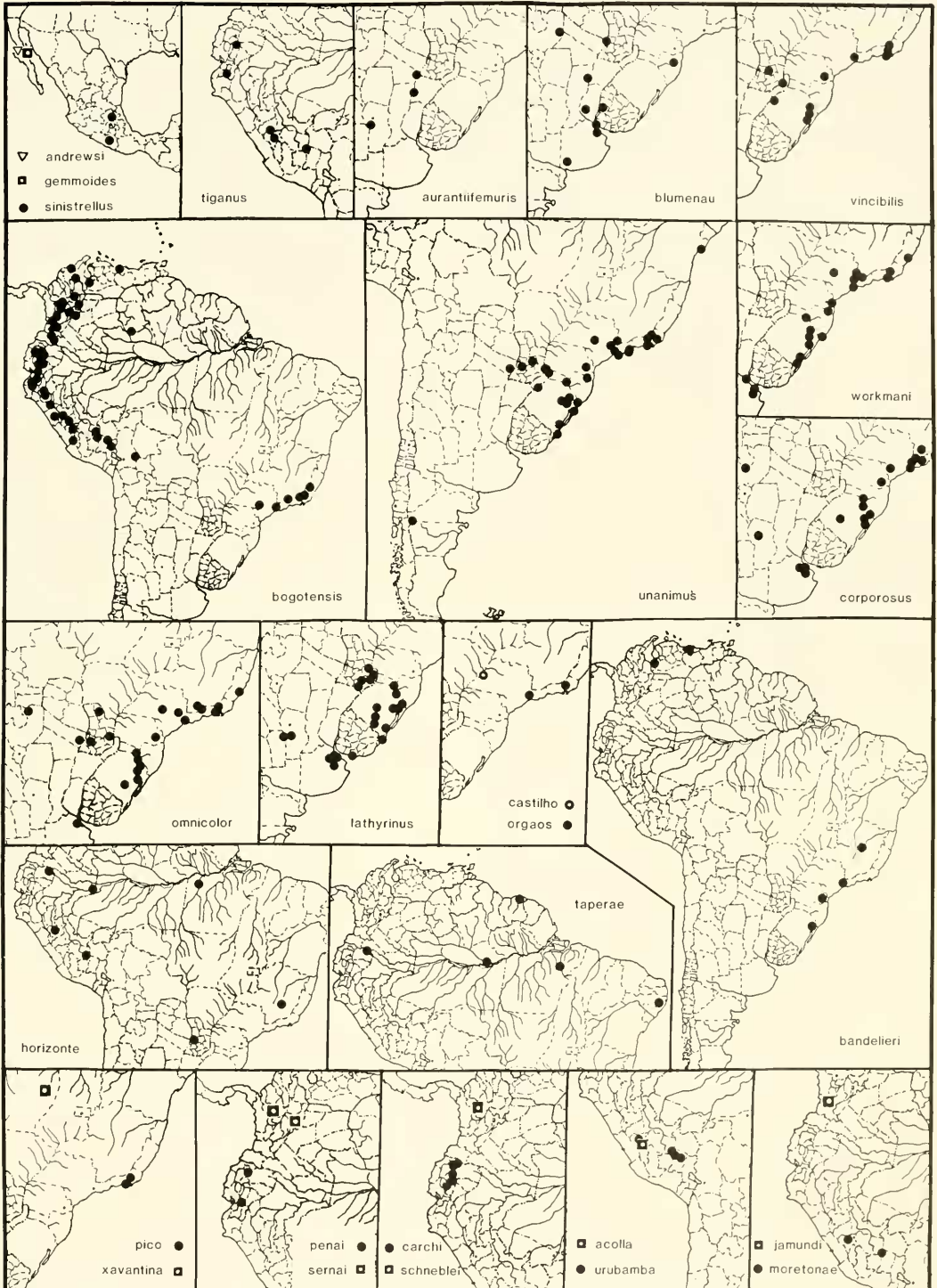
Males have a diagnostically shaped embolus in the palpus. The embolus is partly or completely hidden by the conductor and other structures. Also the embolus may or may not have an embolus cap. Unless many specimens are available, we do not know whether the cap is present or not. The prominent median apophysis is variable in shape in many species.

KEY TO FEMALE ARANEUS FROM MEXICO AND THE NEOTROPICS

1. Scape torn off in mated individuals (Figs. 10, 326, 330, 511, 515) ..... 2  
 - Epigynum with a scape ..... 10  
 2(1). Lateral plates of epigynum triangular in posterior view (Figs. 322, 327) ..... 3  
 - Lateral plates otherwise ..... 4  
 3(2). A pair of seminal receptacles visible through transparent exoskeleton anterior of a semicircular ridge (Fig. 326); São Paulo, Brazil (Map 3) ..... *lenkoi*  
 - Seminal receptacles not visible anterior of circular ridge (Fig. 321); Rio de Janeiro State to Paraná, Brazil (Map 3) ..... *iguacu*  
 4(2). Median plate small and pentagonal in posterior view (Fig. 331); Colombia (Map 3) ..... *chingaza*  
 - Median plate otherwise ..... 5  
 5(4). Median plate projecting ventrally beyond lateral plates (Fig. 11); lateral plates each with a sclerotized ventral thumb (Fig. 11); Ecuador, Peru (Map 2) ..... *tiganus*  
 - Median plate otherwise ..... 6  
 6(5). Lateral plate in shape of thin wings in posterior view (Fig. 407); Mexico, Central America (Map 5) ..... *flavus*  
 - Lateral plates otherwise ..... 7  
 7(6). Openings less than their diameter apart (Fig. 499); Oaxaca, Mexico (Map 5) ..... *ocaxa*  
 - Openings more than 1.5 diameters apart (Figs. 376, 511, 515); Mexico ..... 8  
 8(7). Openings facing median (Fig. 515); central Mexico (Map 5) ..... *tellezi*  
 - Opening facing laterally (Figs. 376, 511), central Mexico (Map 5) ..... 9  
 9(5). Openings on lateral edge (Fig. 376); Pacific Coast, Mexico (Map 5) ..... *colima*  
 - Openings some distance from edge (Fig. 511); central Mexico (Map 5) ..... *tenancingo*  
 10(1). Scape of epigynum as long as 1.5 times

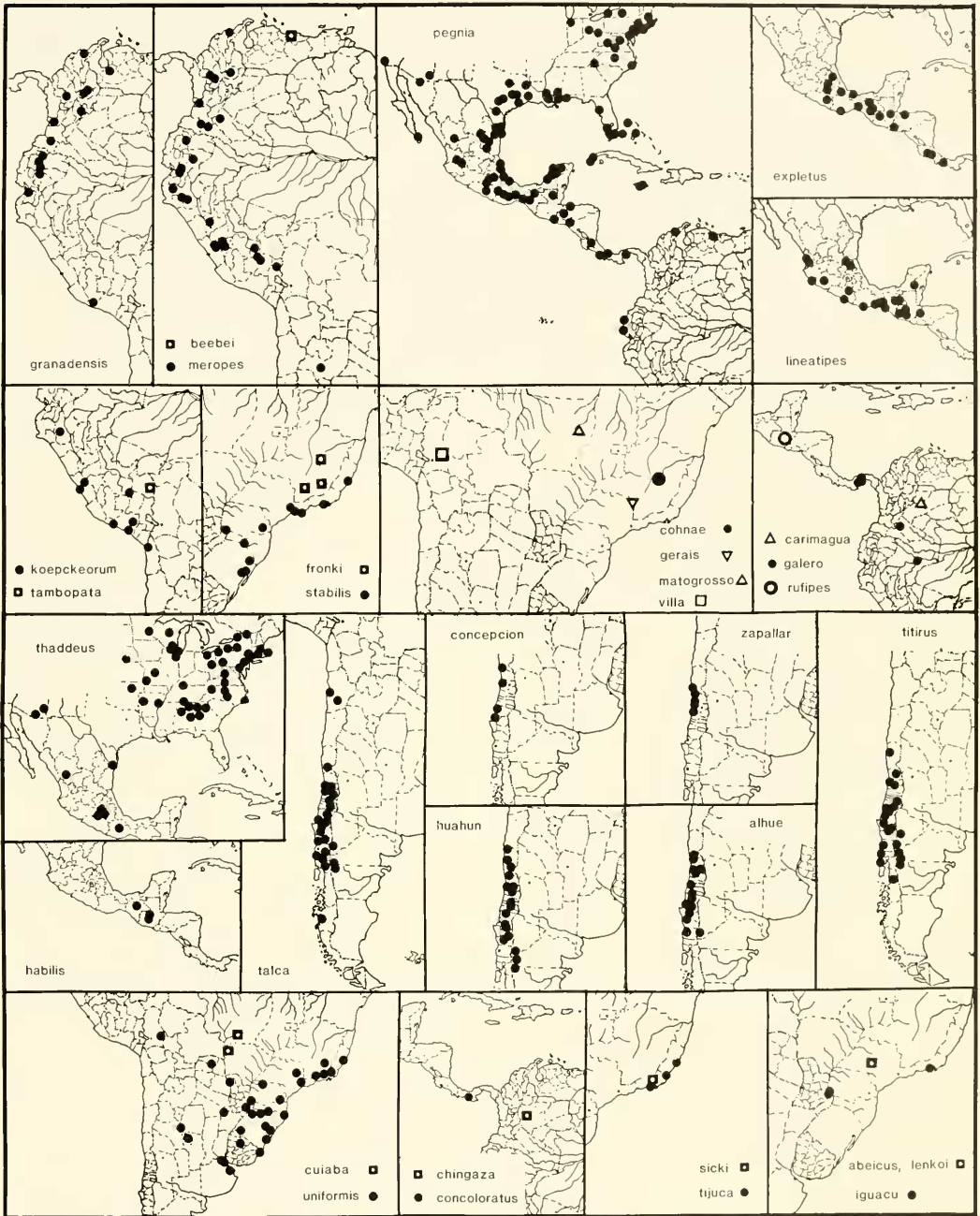
its width; or scape without wrinkles (Figs. 9, 404, 410) ..... 11  
 - Scape at least twice as long as wide and with transverse wrinkles ..... 25  
 11(10). Scape oval and with anterior notch (Fig. 9); Ecuador, Peru (Map 2) ..... *tiganus*  
 - Scape otherwise ..... 12  
 12(11). Abdomen oval, longer than wide with longitudinal bands (Figs. 408, 412) ..... 13  
 - Abdomen otherwise ..... 14  
 13(12). Scape with a stalk (Fig. 404); Mexico to Nicaragua (Map 5) ..... *flavus*  
 - Scape broadly attached (Fig. 410); Pacific Coast, Mexico (Map 5) ..... *tepic*  
 14(12). Abdomen wider than long with lateral points (Fig. 341); Central America to Amazon (Map 5) ..... *sextus*  
 - Abdomen otherwise ..... 15  
 15(14). Hispaniola (Map 5) ..... 16  
 - Continental ..... 17  
 16(15). Spotted legs ..... *hispaniola*  
 - Uniform orange legs ..... *bryantae*  
 17(15). Scape wider than area of base visible on either side (Figs. 5, 211, 376) ..... 18  
 - Area of base visible on either side wider than diameter of scape (Fig. 343); Costa Rica (Map 5) ..... *microsoma*  
 18(17). Scape triangular (Figs. 5, 211) ..... 19  
 - Scape circular (Fig. 376) ..... 20  
 19(18). Epigynum in posterior view with triangular depression (Fig. 6); more than 10 mm total length; Mexico (Map 2) ..... *sinistrellus*  
 - Epigynum with large median plate in posterior view (Fig. 212); less than 9 mm total length; Guatemala (Map 5) ..... *guatemus*  
 20(18). Epigynum with a bordered opening in ventral view (Figs. 369, 376, 381) ..... 21  
 - Epigynum otherwise (Figs. 215, 372, 400) ..... 23  
 21(20). Scape stalked (Fig. 376); abdomen oval (Fig. 378); Pacific Coast, Mexico (Map 5) ..... *colima*  
 - Scape broadly attached (Figs. 369, 381); abdomen widest anteriorly (Figs. 371, 383) ..... 22  
 22(21). Openings close to scape (Fig. 381); Guerrero, Mexico (Map 5) ..... *lanio*  
 - Openings some distance from scape (Fig. 369); Cuba (Map 5) ..... *faxoni*  
 23(20). Slits posteriorly on base on each side of scape in ventral view (Fig. 400); Pacific Coast, Mexico (Map 5) ..... *mazamitla*  
 - Epigynum otherwise (Figs. 215, 372) ..... 24  
 24(23). Median plate in posterior view with ventral notch (Fig. 373); width of





Map 2. Distribution of *Araneus* species.

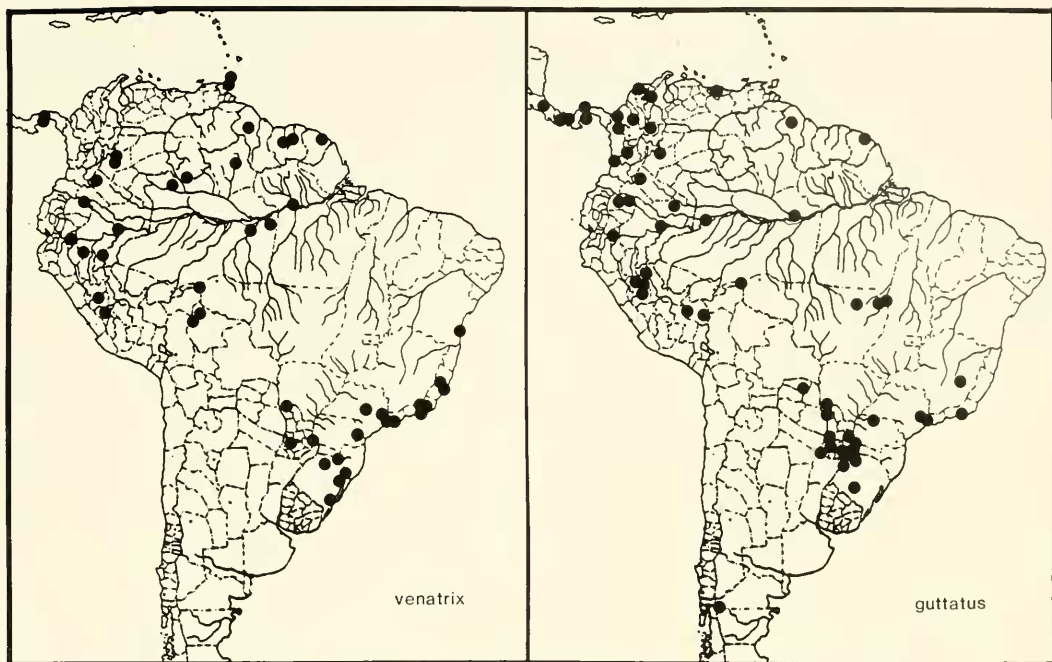
	area of base visible on each side of scape less than half diameter of scape (Fig. 372); Bahamas (Map 5) ..... <i>bimini</i>		on the median side (Fig. 466); (Map 5) ..... <i>popago</i>
-	Median plate in posterior view without ventral notch (Fig. 216); width of area of base visible on each side of scape more than half diameter of scape (Fig. 215); Guatemala (Map 3) ..... <i>rufipes</i>		No such depression and lip present (Fig. 477); (Map 5) ..... <i>mendoza</i>
25(10).	Scape twisted sideways on itself (Figs. 122, 312, 457) ..... 26	35(29).	Posterior edge with a nipple on each side of scape (Fig. 474); Guerrero, Mexico (Map 5) ..... <i>nacional</i>
-	Scape straight or twisted anteriorly on itself (Figs. 1, 17, 37, 58, 290) ..... 41	-	Posterior edge otherwise (Figs. 462, 503) ..... 36
26(25).	Mexico, Guatemala ..... 29	36(35).	Openings visible on posterior (Fig. 504); Chiapas, Mexico (Map 5) ..... <i>baul</i>
-	Costa Rica, Panama, South America ..... 27	-	Openings visible on venter (Figs. 470, 487, 494) ..... 37
27(26).	Posterior median plate wrinkled (Fig. 123); wrinkles visible on posterior edge in ventral view (Fig. 122); Ecuador (Map 2) ..... <i>carchi</i>	37(36).	Posterior edge in ventral view concave (Fig. 494); Michoacan, Mexico (Map 5) ..... <i>anguinifer</i>
-	Posterior median plate smooth (Figs. 296, 309); posterior edge in ventral view smooth (Figs. 295, 303) ..... 28	-	Posterior edge in ventral view with median projection (Figs. 462, 470) ..... 38
28(27).	Epigynum in posterior view with two circular depressions on anterior edge of median plate (Figs. 304, 309, 313); Central America to northern Argentina (Map 4) ..... <i>guttatus</i>	38(37).	A diagonal slit visible on each side of scape (Fig. 487); Arizona to central Mexico (Map 5) ..... <i>guerrerensis</i>
-	Epigynum in posterior view lacking circular depressions (Figs. 296, 301); Panama to Paraguay (Map 4) ..... <i>venatrix</i>	-	Epigynum otherwise (Figs. 457, 462, 470) ..... 39
29(26).	Scape with two or more sideways twists on itself (Figs. 457, 462) ..... 35	39(38).	A circular ridge on each side of scape in ventral view (Fig. 457); central Mexico (Map 5) ..... <i>leones</i>
-	Scape with only one sideways twist on itself (Figs. 445, 466, 507) ..... 30	-	Epigynum without circular ridge (Figs. 462, 470) ..... 40
30(29).	Base with a sphere on each side of scape (Figs. 445, 482) ..... 31	40(39).	Median plate in posterior view ventrally fused to laterals (Fig. 471); central Mexico (Map 5) ..... <i>quirapan</i>
-	Base otherwise ..... 32	-	Median plate heart-shaped (Fig. 463); Mexico (Map 5) ..... <i>salto</i>
31(30).	Spheres of base sclerotized (Fig. 445); with two slits in ventral view (Fig. 446); Texas, Arizona, northern Mexico (Map 5) ..... <i>cochise</i>	41(25).	Chile, and Argentine Andes ..... 42
-	Spheres of base not sclerotized (Fig. 482); with two round depressions in posterior view (Fig. 483); central Mexico (Map 5) ..... <i>puebla</i>	-	Neotropics outside of Chile and of Argentine Andes ..... 47
32(30).	Median plate rectangular, anteriorly fused (Fig. 471); a round depression on each side in ventral view (Fig. 470); central Mexico (Map 5) ..... <i>quirapan</i>	42(41).	Epigynum in posterior view longer than wide with a pair of circular depressions (Fig. 268); (Map 3) ..... <i>titirus</i>
-	Median plate wider ventrally than dorsally (Figs. 467, 478, 508) ..... 33	-	Epigynum otherwise ..... 43
33(32).	Seminal receptacle showing as a dark spot on each side of scape (Fig. 507); New Mexico, Arizona to northern Mexico (Map 5) ..... <i>arizonensis</i>	43(42).	Base of epigynum in ventral view with a transverse lobe on each side (Fig. 258); (Map 3) ..... <i>huahun</i>
	Base of epigynum otherwise (Figs. 466, 477), central Mexico ..... 34	-	Epigynum otherwise ..... 44
34(33).	Base of epigynum with a depression on each side of scape having a lip	44(43).	Base of epigynum subtriangular in ventral view with sclerotized, dark lateral plates visible on each side (Fig. 245); (Map 3) ..... <i>talca</i>
		-	Epigynum otherwise ..... 45
		45(44).	Median plate in posterior view with a V-shaped depression (Figs. 251, 255) ..... 46
		-	Median plate with semicircular wrinkles (Fig. 263); (Map 3) ..... <i>alhue</i>
		46(45).	V-shaped depression forming an acute angle dorsally (Fig. 251); (Map 3) ..... <i>conception</i>
		-	V-shaped depression forming a right



Map 3. Distribution of *Araneus* species.

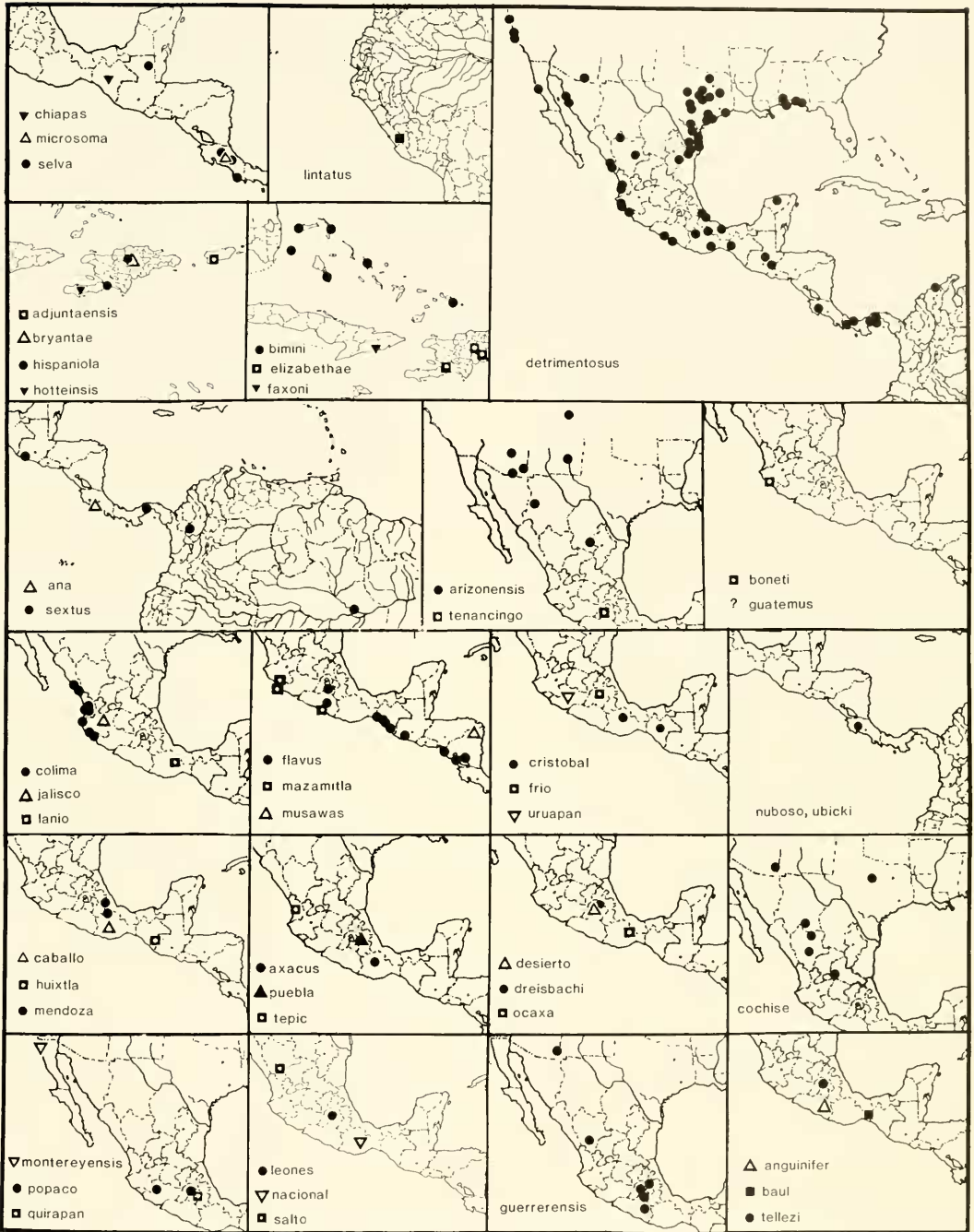
	angle dorsally (Fig. 255); (Map 3) .....	<i>zapallar</i>	48(47).	Base of epigynum with a round depression on each side of scape (Figs. 357, 361); Hispaniola .....	49
47(41).	Greater Antilles .....	48	-	Base with a slit on each side of scape	
-	Continental and Trinidad .....	50			

	(Fig. 414); Puerto Rico (Map 5) .....	61(60).	A dark sphere visible through base on each side of scape (Fig. 418); Guerrero, Mexico (Map 5) .....	<i>caballo</i>
	..... <i>adjuntaensis</i>	-	Epigynum otherwise .....	62
49(48).	Ventral depression with an anterior lip only (Fig. 357); Hispaniola (Map 5) .....	62(61).	Base with openings on each side of scape facing laterally (Fig. 435); Chiapas, Mexico (Map 5) .....	<i>crisobal</i>
	..... <i>elizabethae</i>	-	Epigynum otherwise .....	63
	Ventral depression with anterior and posterior lips (Fig. 361); Hispaniola (Map 5) .....	63(62).	In posterior view, a pair of oval lateral plates almost touching (Fig. 336); Guatemala, Costa Rica (Map 5) .....	<i>selva</i>
50(47).	Median and lateral plates in posterior view fused and projecting ventrally on each side (Fig. 396); scape gradually widening distally (Fig. 395); southern U.S. to Colombia (Map 5) .....	-	Epigynum otherwise .....	64
	..... <i>detrimentosus</i>	64(63).	Scape wider than part of base visible on each side in ventral view (Fig. 449); central Mexico (Map 5) .....	<i>dreisbachi</i>
-	Epigynum otherwise .....	-	Part of base on each side of scape as wide as or wider than scape (Figs. 440, 453) .....	65
51(50).	Base with a V-shaped slit opening ventrally on each side of scape with dark seminal receptacles showing at posterior end of slit (Fig. 228); abdomen oval, wider than long, with a transverse white patch on venter (Figs. 232, 233); eastern and southern U.S. to Colombia and Ecuador (Map 3) .....	65(64).	Base with an edge on each side of scape, parallel with scape (Fig. 453); central Mexico (Map 5) .....	<i>desierto</i>
	..... <i>pegnia</i>	-	Base entire (Fig. 440); Guerrero, Mexico (Map 5) .....	<i>axacus</i>
-	Base of epigynum otherwise .....	66(52).	Scape projecting from posterior margin of base (Fig. 153); Peru (Map 3) .....	<i>tambopata</i>
52(51).	Length of scape about two to three times its width (Fig. 435) .....	-	Epigynum otherwise .....	67
-	Length of scape more than four times its width (Fig. 1) .....	67(66).	Epigynum with large round bordered opening in ventral or posterior view (Figs. 100, 102, 113) .....	68
53(52).	South America .....	-	Epigynum otherwise .....	69
-	Mexico, Central America .....	68(67).	Openings ventral on each side of scape (Fig. 113) .....	70
54(53).	Median plate triangular, ventrally bulging (Fig. 110); Colombia (Map 2) .....	-	Openings posterior on each side (Figs. 100, 102); Amazon (Map 2) .....	<i>horizonte</i>
	..... <i>sernai</i>	69(67).	Openings to side of scape (Fig. 113); median plate narrowing ventrally in posterior view (Fig. 114); Venezuela, Brazil (Map 2) .....	<i>bandelieri</i>
-	Median plate otherwise .....	-	Opening lateral on base (Fig. 168); median plate wide in posterior view (Fig. 169); Peru to northern Chile (Map 3) .....	<i>koepckeorum</i>
55(54).	Median plate narrow with parallel sides (Fig. 348); Peru (Map 5) .....	70(68).	Length of scape about twice that of base (Figs. 272, 276, 279) .....	71
	..... <i>lintatus</i>	-	Scape only slightly extending beyond base (Figs. 24, 282) .....	73
-	Median plate otherwise .....	71(70).	Base in ventral view entire (Fig. 279); median plate in posterior view anteriorly fused (Fig. 280); Bolivia (Map 3) .....	<i>villa</i>
56(55).	Openings in lateral plates on venter (Figs. 146, 147); Colombia to Peru (Map 3) .....	-	Base with lobes on each side of scape (Figs. 272, 276); median plate triangular (Figs. 273, 277) .....	72
	..... <i>granadensis</i>	72(71).	Median plate longer than wide (Fig. 273); Bolivia, Brazil, Argentina (Map 3) .....	<i>uniformis</i>
-	Openings otherwise .....	-	Median plate wider than long (Fig. 277); Mato Grosso, Brazil (Map 3) .....	<i>cutaba</i>
57(56).	In ventral view, median plate bulging on each side of scape (Fig. 138); Peru (Map 2) .....			
	..... <i>acolla</i>			
-	In ventral view, median plate bulging as a transverse swelling behind posterior margin of base (Fig. 117); Rio de Janeiro State, Brazil (Map 2) .....			
	..... <i>pico</i>			
58(53).	A spherical bulge on each side of scape (Fig. 445); southern U.S. to northern Mexico (Map 5) .....			
	..... <i>cochise</i>			
-	Scape otherwise .....			
59(58).	Base in ventral view with transverse groove (Fig. 389); Costa Rica (Map 5) .....			
	..... <i>ana</i>			
-	Epigynum otherwise .....			
60(59).	A loop of duct visible on base on each side of scape (Fig. 422); Costa Rica (Map 5) .....			
	..... <i>ubicki</i>			
-	Epigynum otherwise .....			

Map 4. Distribution of *Araneus* species.

- |         |  |                     |    |
|---------|--|---------------------|----|
| 73(70). | Scape distally pointed (Fig. 290); median plate bulging posteriorly behind transverse edge of base (Fig. 290); Espírito Santo, Rio de Janeiro States, Brazil (Map 3) .....                 | <i>tijuca</i>       |    |
| -       | Scape usually distally rounded, base otherwise .....   |                     | 74 |
| 74(73). | Abdomen with lateral humps (Figs. 318, 387) .....  |                     | 75 |
| -       | Abdomen without humps .....  |                     | 76 |
| 75(74). | Scape of epigynum distally expanded (Fig. 386); Pacific Coast, Mexico (Map 5) .....  | <i>boneti</i>       |    |
| -       | Scape of epigynum distally narrowed (Fig. 316); São Paulo State, Brazil (Map 3) .....  | <i>abeicus</i>      |    |
| 76(74). | Mexico, Central America .....  |                     | 77 |
| -       | South America .....  |                     | 82 |
| 77(76). | Venter of first femur with black longitudinal lines (Fig. 242); Mexico to Honduras (Map 3) .....   | <i>lineatipes</i>   |    |
| -       | Venter of femur never with longitudinal lines .....  |                     | 78 |
| 78(77). | A longitudinal rectangular depression on each side of scape (Fig. 223); venter of abdomen with black square (Fig. 226); Panama, Colombia (Map 3) .....                                     | <i>galero</i>       |    |
| -       | Epigynum otherwise; venter of abdomen otherwise .....  |                     | 79 |
| 79(78). | Venter of epigynum with transverse sculpturing (Figs. 219, 235) .....  |                     | 80 |
| -       | Venter of epigynum with longitudinal or diagonal sculpturing (Figs. 193, 197, 282) .....   |                     | 81 |
| 80(79). | A concave edge on each side of scape (Fig. 235); median plate large and rectangular, wider than long in posterior view (Fig. 236); eastern U.S., Arizona to Guerrero, Mexico (Map 3) ..... | <i>thaddeus</i>     |    |
| -       | A transverse slit on each side of scape with lateral plates overhanging median plate on sides (Fig. 219); posterior view as in Figure 220; Chiapas, Guatemala (Map 3) .....                | <i>habilis</i>      |    |
| 81(79). | A diagonal dark mark on each side of scape (Fig. 282); posterior median plate triangular (Fig. 283); Panama (Map 3) .....  | <i>concoloratus</i> |    |
| -       | Epigynum without diagonal mark in ventral view (Figs. 193, 197, 199); posterior plate rounded (Figs. 194, 198, 200); central Mexico to Panama (Map 3) .....                                | <i>expletus</i>     |    |
| 82(76). | Epigynum with a wrinkled structure below scape (Fig. 286); Rio de Janeiro State, Brazil (Map 3) .....  | <i>sicki</i>        |    |
| -       | Epigynum otherwise .....   |                     | 83 |
| 83(82). | Posterior margins in ventral view lobed  |                     |    |

	(Figs. 128, 133); posterior median plate barely framed by narrow lateral plates with transverse grooves (Figs. 129, 134); Ecuadorian, Peruvian Andes .....	84		abdomen light with tiny silver platelets (Fig. 39); Bolivia, Argentina (Map 2) .....	<i>aurantiifemuris</i>
-	Epigynum otherwise .....	85	93(91).	Median plate in posterior view with constriction ventrally (Figs. 72, 79); in ventral view a median lobe and a pair of lateral lobes overhanging anterior of base (Figs. 71, 78) .....	94
84(83).	In posterior view lateral plates surround median plate ventrally (Fig. 134); (Map 2) .....	<i>urubamba</i>	-	Epigynum otherwise .....	95
-	In posterior view lateral plates surround median plate only on sides and posterior (Fig. 129); Ecuadorian Andes (Map 2) .....	<i>penai</i>	94(93).	Median plate wider than lateral plates (Fig. 72); southern Brazil, Argentina (Map 2) .....	<i>corporosus</i>
85(83).	Median plate in posterior view twice as long as wide and lateral plates narrow, about four times as long as wide (Fig. 175); southern Brazil (Map 3) .....	<i>stabilis</i>	-	Median plate as wide as or narrower than lateral plates (Fig. 79); southern Brazil, Argentina (Map 2) .....	<i>workmani</i>
-	Epigynum otherwise .....	86	95(93).	Median plate in posterior view a stalked pentagonal, widest in middle (Figs. 59, 106) .....	96
86(85).	A depression at ventral end of lateral plates, seen in ventral and posterior views (Figs. 146, 147); scape wide and with sides parallel (Fig. 146) and posterior median plate rectangular, longer than wide (Fig. 147); Colombia to Peru (Map 3) .....	<i>granadensis</i>	-	Median plate never pentagonal (Figs. 50, 65) .....	97
-	Epigynum otherwise .....	87	96(95).	In ventral view a median constriction of raised area under scape (Fig. 105); Amazon, eastern Brazil (Map 2) .....	<i>taperae</i>
87(86).	A finger from lateral plate "overhanging" median plate in posterior view as in Figures 2, 33; scape looping anteriorly (Figs. 1, 17, 32); Colombia to Brazil (Map 2) .....	<i>bogotensis</i>	-	In ventral view, a longitudinal slit on each side of scape (Fig. 58); Brazil, Paraguay, Argentina (Map 2) .....	<i>unanimus</i>
-	Epigynum otherwise .....	88	97(95).	Base of epigynum in ventral view with posterior diagonal slit (Figs. 85, 92, 95) .....	98
88(87).	Median plate in posterior view distinctly narrower than lateral plates and median plate only slightly wider dorsally than ventrally (Figs. 180, 185); median plate in ventral view forms a bulge (Figs. 179, 184) .....	89	-	Epigynum otherwise (Figs. 49, 64, 142) .....	100
-	Epigynum otherwise .....	90	98(97).	Median plate in posterior view with a pair of distinct ventral dimples (Fig. 86); lateral plates with distinct ventral median angles (Fig. 86); southern Brazil, Paraguay, Argentina (Map 2) .....	<i>lathyrinus</i>
89(88).	Median plate wrinkled (Fig. 185), wider than lateral plates in ventral view (Fig. 184); Venezuela (Map 3) .....	<i>beebei</i>	-	Median plate without dimples; lateral plates rounded (Figs. 93, 96) .....	99
-	Median plate smooth (Fig. 180) narrower than lateral plates in ventral view (Fig. 179); Minas Gerais, Brazil (Map 3) .....	<i>fronki</i>	99(98).	Lateral plates widest dorsally; median edge of lateral plates in posterior view with a curl ventrally (Fig. 96); Colombia (Map 2) .....	<i>schneblei</i>
90(88).	In posterior view lateral plates twisted (Figs. 161, 163); Colombia to Bolivia (Map 3) .....	<i>meropes</i>	-	Lateral plates with sides about parallel; median edge of lateral plates in posterior view turning to sides (Fig. 93); Rio de Janeiro, São Paulo States, Brazil (Map 2) .....	<i>orgaos</i>
-	Lateral plates never twisted in posterior view .....	91	100(97).	Median plate oval, with curved transverse grooves dorsally (Fig. 50); southern Brazil, Paraguay, northern Argentina (Map 2) .....	<i>omnicolor</i>
91(90).	Median plate a stalked square (Figs. 25, 38) .....	92	-	Median plate otherwise (Figs. 43, 65, 143) .....	101
-	Median plate otherwise .....	93	101(100).	Median plate ventrally projecting beyond lateral plates (Fig. 43); lateral plates with pointed ventral tip (Fig. 43); southern Brazil, Argentina (Map	
92(91).	Scape looping anteriorly (Fig. 24); abdomen dark in color; Colombia to Brazil (Map 2) .....	<i>bogotensis</i>			
	Scape without anterior loop (Fig. 37);				



Map 5. Distribution of *Araneus* species.

	2) _____	<i>blumenau</i>
	Epigynum otherwise	102
102(101).	Lateral plates with median ventral angle (Fig. 143); Peru (Map 2)	
	_____	<i>moretonae</i>
	Lateral plates with rounded median edge (Fig. 65); southern Brazil, Paraguay (Map 2)	<i>vincibilis</i>

KEY TO MALE ARANEUS FROM MEXICO AND THE NEOTROPICS

1.	First coxa with hook on distal margin	39
-	First coxa without hook	2
2(1).	Median apophysis of palpus with one proximal spine and a distal "fish-tail" end (Fig. 431) or distal frayed end, or distal numerous teeth (Figs. 342, 519)	3
-	Median apophysis otherwise (sometimes with minute distal knob or teeth in palpi with embolus making counterclockwise turn in left palpus)	16
3(2).	Spine in middle of median apophysis pointing toward base of cymbium (Fig. 342); Guatemala to Amazon (Map 5)	<i>sextus</i>
-	Spines pointing toward middle or distal end of cymbium (Figs. 481, 486)	4
4(3).	Embolus visible and coiled clockwise in left palpus (Figs. 481, 486, 497)	5
-	Embolus coiled counterclockwise straight or hidden	11
5(4).	Embolus only slightly curved or tightly coiled (Figs. 426, 493, 519)	6
-	Embolus with a grand loop through distal portion of bulb (Figs. 481, 486, 497)	8
6(5).	Embolus without distal coil (Fig. 426); Costa Rica (Map 5)	<i>ubicki</i>
-	Embolus with distal coil (Figs. 493, 519)	7
7(6).	Conductor with a distal lobe in mesal view of palpus (Fig. 493); Arizona to central Mexico (Map 5)	<i>guerrerensis</i>
-	Conductor distally pointed (Fig. 519); central Mexico (Map 5)	<i>tellezi</i>
8(5).	Embolus with curved filamentous portion originating in a base (Figs. 481, 486, 502)	9
-	Embolus without set-off base as in Figure 497; Chiapas, Mexico (Map 5)	<i>huixtla</i>
9(5).	Base of embolus expanded (Fig. 481); central Mexico	<i>mendoza</i>
-	Base of embolus otherwise (Figs. 486, 502)	10
10(9).	Filamentous portion of embolus originating distally from base (Fig. 486); central Mexico (Map 5)	<i>puebla</i>
-	Filamentous portion originating proximally from base (Fig. 502); Oaxaca, Mexico (Map 5)	<i>ocaxa</i>
11(4).	Embolus a slightly curved rod (Fig. 456); central Mexico (Map 5)	<i>desierto</i>
-	Embolus otherwise	12
12(11).	Embolus a counterclockwise filament in left palpus (Fig. 439); Chiapas, Mexico (Map 5)	<i>crisobal</i>
-	Embolus otherwise	13
13(12).	Width of conductor in mesal view almost twice its length (Fig. 452); central Mexico (Map 5)	<i>dreisbachi</i>
-	Conductor in mesal view about as wide as long (Figs. 431, 461, 469)	14
14(13).	Terminal apophysis "hanging down" and pointed (Fig. 431); Costa Rica (Map 5)	<i>nuboso</i>
-	Terminal apophysis otherwise; central Mexico	15
15(14).	Terminal apophysis with rounded bulge as in Figure 469; (Map 5)	<i>popaco</i>
-	Terminal apophysis otherwise, as in Figure 461; (Map 5)	<i>leones</i>
16(2).	Median apophysis with one spine (Figs. 375, 388)	17
-	Median apophysis with two or more spines or knobs (Figs. 190, 346, 351)	31
17(16).	Embolus coiled clockwise in left palpus (Figs. 426, 448)	18
-	Embolus otherwise	19
18(17).	Embolus gently curved as in Figure 426; Costa Rica (Map 5)	<i>ubicki</i>
-	Embolus with a large loop as in Figure 448; Texas, Arizona to central Mexico (Map 5)	<i>cochise</i>
19(17).	Embolus curved counterclockwise in left palpus (Figs. 392, 439, 444)	20
-	Embolus not visible or otherwise	25
20(19).	Embolus originating from "top" of bulb (Figs. 403, 409, 427)	22
-	Embolus U-shaped and originating from center of bulb (Figs. 392, 444)	21
21(20).	Terminal apophysis distally narrow (Fig. 392); central Mexico (Map 5)	<i>jalisco</i>
-	Terminal apophysis triangular (Fig. 444); Guerrero, Mexico (Map 5)	<i>axacus</i>
22(20).	Conductor very wide, almost touching cymbium (Fig. 427); Nicaragua (Map 5)	<i>musawas</i>
-	Conductor otherwise	23
23(22).	Spine of median apophysis pointed toward distal end of palpus, embolus loop small as in Figure 439; Chiapas, Mexico (Map 5)	<i>crisobal</i>
-	Median apophysis otherwise (Figs. 403, 409)	24
24(23).	Terminal embolus loop distal of embolus base in bulb as in Figure 409; central Mexico to Nicaragua (Map 5)	<i>flavus</i>
-	Terminal embolus loop proximal of em-	



- bolus base in bulb as in Figure 403; central Mexico (Map 5) ..... *mazamitla*
- 25(19). Tip of embolus overhanging conductor (Figs. 380, 433) ..... 26
- Embolus otherwise ..... 27
- 26(25). Median apophysis almost rectangular (Fig. 380); Pacific Coast, Mexico (Map 5) ..... *colima*
- Median apophysis round (Fig. 433); central Mexico (Map 5) ..... *uruapan*
- 27(25). Conductor in mesal view of palpus much higher than wide (Fig. 452); central Mexico (Map 5) ..... *dreisbachi*
- Conductor otherwise (Figs. 375, 429, 469) ..... 28
- 28(27). Conductor stalked and much smaller than median apophysis (Fig. 429); central Mexico (Map 5) ..... *frio*
- Conductor otherwise (Figs. 375, 388, 469) ..... 29
- 29(28). Median apophysis round with spine on its side (Fig. 375); Bahamas (Map 5) ..... *bimini*
- Median apophysis otherwise (Figs. 388, 469) ..... 30
- 30(29). Terminal apophysis narrow and pointed distally (Fig. 388); Mexico (Map 5) ..... *boneti*
- Terminal apophysis a bulging lobe (Fig. 469); central Mexico (Map 5) ..... *popaco*
- 31(16). Median apophysis with two spines or lobes (Figs. 346, 351, 514) ..... 32
- Median apophysis usually with three spines (Figs. 183, 191, 227, 510) ..... 34
- 32(31). Median apophysis with two round knobs (Fig. 351); Chiapas, Mexico (Map 5) ..... *chiapas*
- Median apophysis otherwise ..... 33
- 33(32). Median apophysis with two lateral hooks (Fig. 346); Costa Rica (Map 5) ..... *microsoma*
- Median apophysis with two large spines pointing toward distal end of cymbium (Fig. 514); central Mexico (Map 5) ..... *tenancingo*
- 34(31). Median apophysis with one large and two smaller spines (Fig. 510); New Mexico, Arizona, northern Mexico (Map 5) ..... *arizonensis*
- Median apophysis with two larger and one smaller, or one blunt spine (Figs. 189-191, 227) ..... 35
- 35(34). Median apophysis as in Figure 227; Central America, Colombia (Map 3) ..... *galero*
- Median apophysis otherwise; South America ..... 36
- 36(35). Palpal patella with only one seta; embolus a straight prong (Fig. 188); Minas Gerais, Brazil (Map 3) ..... *cohae*
- Palpal patella with two setae; embolus a twisted structure (Figs. 189-191) ..... 37
- 37(36). Median apophysis longer than wide (Fig. 189); Mato Grosso, Brazil (Map 3) ..... *matogrosso*
- Median apophysis as wide as long (Figs. 190, 191) ..... 38
- 38(37). Distal spine of median apophysis small (Fig. 190); Colombia (Map 3) ..... *carimagua*
- Distal spine of median apophysis wide, blunt (Fig. 191); Minas Gerais, Brazil (Map 3) ..... *gerais*
- 39(1). Proximal end of elongate median apophysis with a pair of spines (Figs. 157, 299, 325) ..... 50
- Proximal end of median apophysis with one spine (Fig. 399) or with two spines and median apophysis circular (Fig. 178) ..... 40
- 40(39). Proximal end of median apophysis with one spine (Figs. 14, 244, 338, 399) ..... 41
- Proximal end with two or three spines close together (Figs. 166, 183, 234, 239) ..... 44
- 41(40). One spine on each end of median apophysis and a distal lobe (Fig. 14); Peru (Map 2) ..... *tiganus*
- Median apophysis with one or two spines (Figs. 244, 338, 399) ..... 42
- 42(41). Embolus a large counterclockwise structure in left palpus (Fig. 399); southern U.S., California to Colombia (Map 5) ..... *detrimentosus*
- Embolus hidden or otherwise (Figs. 244, 338) ..... 43
- 43(42). Median apophysis round (Fig. 244); legs with ventral black lines (Fig. 242); Mexico to Honduras (Map 3) ..... *lineatipes*
- Median apophysis elongate (Fig. 338); legs without lines; Costa Rica (Map 5) ..... *selva*
- 44(40). Median apophysis with two equal-sized spines (Fig. 234); eastern U.S., California to Ecuador (Map 3) ..... *pegnia*
- Median apophysis otherwise ..... 45
- 45(44). Median apophysis with three equal-sized spines (Fig. 239); eastern U.S., Mexico (Map 3) ..... *thaddeus*
- Median apophysis otherwise ..... 46
- 46(45). Filamentous embolus encased in a large transverse wrapper (Fig. 320); São Paulo State, Brazil (Map 3) ..... *abeicus*
- Embolus otherwise ..... 47
- 47(46). Base of conductor surrounded by embolus branches (Figs. 178, 183); Brazil ..... 48
- Base on conductor free (Figs. 166, 172); Colombia, Peru ..... 49
- 48(47). Median apophysis with pair of proximal spines, a blunt spine distally (Fig. 178); southern Brazil (Map 3) ..... *stabilis*
- Median apophysis with one proximal spine and a distal forked spine (Fig.

- 183); Minas Gerais, Brazil (Map 3) ..... *fronki*
- 49(47). Embolus laterally convex (Fig. 166); Andes, Colombia to Bolivia (Map 3) ..... *meropes*
- Embolus laterally concave (Fig. 172); Peru (Map 3) ..... *koepckeorum*
- 50(39). Median apophysis large, shape of half a disc (Fig. 325); southern Brazil (Map 3) ..... *iguacu*
- Median apophysis otherwise ..... 51
- 51(50). Distal end of median apophysis truncate, or with a "fish-tail" (Figs. 21, 208, 271) ..... 56
- Distal end a point or fleshy expansion (Figs. 157, 275, 294, 302) ..... 52
- 52(51). Median apophysis short with distal point as in Figure 157; Colombia (Map 2) ..... *jamundi*
- Median apophysis otherwise ..... 53
- 53(52). Distal end of median apophysis with a prong (Fig. 275); southern Brazil, Bolivia to Argentina (Map 3) ..... *uniformis*
- Median apophysis otherwise ..... 54
- 54(53). Embolus cone-shaped (Fig. 311); widespread (Map 4) ..... *guttatus*
- Embolus curled or twisted (Figs. 294, 299) ..... 55
- 55(54). Embolus with distal curl; median apophysis distally wide (Figs. 299, 302); widespread (Map 4) ..... *venatrix*
- Embolus with twists; median apophysis distally narrow (Fig. 294); Espírito Santo, Rio de Janeiro States, Brazil (Map 3) ..... *tijuca*
- 56(51). Chile, and Argentine Andes (Map 3) ..... 57
- America, other than Chile, and Argentine Andes ..... 61
- 57(56). Embolus with two "horizontal" notches as in Figures 249, 253 ..... 58
- Embolus otherwise ..... 59
- 58(57). Double spine of median apophysis with long narrow neck (Fig. 249) ..... *talca*
- Double spine of median apophysis with short wide neck (Fig. 253) ..... *concepcion*
- 59(57). Embolus with two convex lateral lobes as in Figure 271 ..... *titirus*
- Embolus otherwise ..... 60
- 60(59). Embolus convex laterally; double spine of median apophysis with short neck (Fig. 261) ..... *huahun*
- Embolus concave laterally; double spine of median apophysis with long neck (Fig. 266) ..... *alhue*
- 61(56). Palpus as in Figure 208; Mexico, Central America (Map 3) ..... *expletus*
- South America ..... 62
- 62(61). Median apophysis more than twice as long as wide, never U-shaped (Figs. 15, 41) ..... 70
- Median apophysis about as long as wide or U-shaped (Figs. 68, 75, 121, 126, 136) ..... 63
- 63(62). Brazil, Paraguay to Argentina ..... 66
- Colombia to Peru ..... 64
- 64(63). Conductor stalked (Figs. 136, 137); Peruvian mountains (Map 2) ..... *urubamba*
- Conductor otherwise (Figs. 127, 152) ..... 65
- 65(64). Conductor square (Fig. 127); Ecuadorian mountains (Map 2) ..... *carchi*
- Conductor narrow (Fig. 152); Colombian, Ecuadorian mountains (Map 3) ..... *granadensis*
- 66(63). Terminal apophysis bent on itself; embolus bulky (Fig. 121); Rio de Janeiro State, Brazil (Map 2) ..... *pico*
- Terminal apophysis otherwise; embolus rod-shaped (Figs. 46, 48, 68, 70, 75, 77, 82, 84) ..... 67
- 67(66). Median apophysis U-shaped; embolus straight (Figs. 46, 48); southern Brazil to Argentina (Map 2) ..... *blumenau*
- Median apophysis otherwise; embolus straight or bent (Figs. 68, 75, 84) ..... 68
- 68(67). Embolus straight (Figs. 68, 70); southern Brazil, Paraguay (Map 2) ..... *vincibilis*
- Embolus bent (Figs. 77, 84) ..... 69
- 69(68). Terminal apophysis shorter than subterminal as in Figure 77; embolar lamella with thick base set off from thin branch (Figs. 76, 77); Minas Gerais, Brazil, to Argentina (Map 2) ..... *corporosus*
- Terminal apophysis as long as subterminal apophysis as in Figure 84; embolar lamella with base not set off, but grading into terminal branch (Figs. 83, 84); Espírito Santo State, Brazil, to Buenos Aires Province (Map 2) ..... *workmani*
- 70(62). Tail of median apophysis mitten-shaped with an "upper" tooth (Fig. 15); São Paulo State, Brazil, (Map 2) ..... *castilho*
- Tail of median apophysis otherwise ..... 71
- 71(70). "Fish-tail" of median apophysis with a "lower" tooth (Fig. 40); embolar lamella d-shaped in ventral view (Fig. 41); northern Argentina (Map 2) ..... *aurantifemuris*
- "Fish-tail" without lower tooth, or if with tooth, embolar lamella not d-shaped ..... 72
- 72(71). Embolar lamella complex, with middle portion in mesal view club-shaped (Fig. 131); Ecuadorian mountains (Map 2) ..... *penai*
- Embolar lamella relatively simple (Figs. 21, 56, 116) ..... 73
- 73(72). Embolus rod-shaped (Figs. 57, 63, 91) ..... 75
- Embolus otherwise and with distal notch facing cymbium (Figs. 23, 34, 116) ..... 74
- 74(73). Median apophysis narrowing laterally;

- conductor curved around bulky embolus (Fig. 116); Mato Grosso, Brazil (Map 2) ..... *xavantina*
- Median apophysis widening at lateral end (Fig. 21); conductor may cover narrow embolus (Fig. 21); widespread (Map 2) ..... *bogotensis*
- 75(73). Tip of embolus some distance from lamella, the space in between V-shaped (Fig. 57); terminal apophysis hanging down toward embolus (Fig. 57); Espírito Santo State, Brazil, to Argentina (Map 2) ..... *omnicolor*
- Tip of embolus close to lamella, the space in between oval (Figs. 63, 91); terminal apophysis otherwise (Figs. 63, 89) ..... 76
- 76(75). Subterminal apophysis grooved (Figs. 89, 91); southern Brazil, Paraguay to Argentina (Map 2) ..... *lathyrinus*
- Subterminal apophysis smooth (Figs. 61, 63); Bahia State, Brazil, to Argentina (Map 2) ..... *unanimus*

### *Araneus andrewsi* (Archer)

#### Map 2

*Aranea andrewsi* Archer, 1951a: 31, figs. 63, 64, 82, ♀, ♂. Male holotype from Claremont, California, in AMNH.

*Araneus andrewsi*:—Levi, 1971: 146, figs. 27–33, ♀, ♂.

**Distribution.** Oregon to southern California along coastal plain.

**Additional Record.** MEXICO, *Baja California Norte*: 1.6 km S Miller's Landing, 6 July 1973, ♀ (S. C. Williams, CAS).

### *Araneus gemmoides* Chamberlin and Ivie

#### Map 2

*Araneus gemmoides* Chamberlin and Ivie, 1935: 22, pl. 10, fig. 80, ♀. Female holotype from Salt Lake City, Utah, in AMNH. Levi, 1971: 171, figs. 195–202, ♀, ♂.

**Distribution.** From British Columbia, Canada, to Michigan south to California and Alabama with a record on Isla San Lorenzo, Baja California Norte, Mexico (Levi, 1971).

### *Araneus sinistrellus* (Roewer)

#### Figures 5–8; Map 2

*Aranea sinistra* F. P.-Cambridge, 1904: 510, pl. 48, fig. 21, ♀. Two female syntypes from Omilteme

[Omiltemi, 16 km WSW of Chilpancingo, Guerrero, 2600 m], Mexico, in BMNH, examined. Not *Epeira sinistra* (Thorell, 1873).

*Araneus sinister*:—Petrunkevitch, 1911: 316. Bonnet, 1955: 600.

*Aranea sinistrella* Roewer, 1942: 852. New name because *Aranea sinistra* preoccupied.

**Note.** I follow Roewer since Thorell's name is currently also placed in *Araneus* (Bonnet, 1955).

**Description.** Female. Carapace orange, hairy; eyes in lighter patches, rim of thorax lighter. Labium and endites brown. Sternum orange-brown. Coxae lighter orange-brown; legs orange ringed darker orange. Dorsum of abdomen with anterior median white cardiac mark, light orange without pattern, sclerotized spots dark brown (Fig. 7). Venter with black marks between epigynum and spinnerets (Fig. 8). Posterior median and lateral eyes 0.8 diameter of anterior median eyes. Anterior median eyes 1.5 their diameter apart, 4.5 from laterals. Posterior median eyes their diameter apart, 5 from laterals. Abdomen with pointed humps. Total length 16 mm. Carapace 8.3 mm long, 7.3 wide. First femur 9.6 mm, patella and tibia 11.5, metatarsus 7.5, tarsus 3.2. Second patella and tibia 10.7 mm, third 6.7, fourth 10.2.

The unknown male presumably has two hooks at the lateral end of the median apophysis, as do other species close to *A. cavaticus*.

**Variation.** Total length varies from 16 to 22 mm. The scape of the type specimen is wider at the tip and more rounded than the one illustrated (Fig. 5).

**Diagnosis.** *Araneus sinistrellus* is close to *A. cavaticus* (Keyserling) (Levi, 1971, figs. 187–194) of the eastern United States, having a wide triangular scape covering almost the entire base (Fig. 5) but unlike that of *A. cavaticus*, the scape is flat with the rim indistinct (Figs. 5, 6).

**Natural History.** If the habits of *A. sinistrellus* are the same as those of its relatives, it will be found on cliffs and buildings.

**Record.** MEXICO *Hidalgo*: 16 to 40 km

S Jacala, July 1956, 8 ♀, 3 imm. (V. Roth, W. J. Gertsch, AMNH).

*Araneus tiganus* (Chamberlin)  
Figures 9–14; Map 2

*Aranea tiganus* Chamberlin, 1916: 251, pl. 19, fig. 2, ♂. Male holotype from Lucma, 6000 ft (2000 m), Cusco, Peru, in MCZ, examined. Roewer, 1942: 554.

*Araneus tiganus*:—Bonnet, 1955: 613.

**Description.** Female from Baños, Ecuador. Carapace dark brown with white down. Chelicerae, endites, labium, sternum dark brown. Coxae orange; legs orange with dark brown rings. Dorsum of abdomen dark brown, lighter in center with a pair of white marks anteriorly and darker irregular marks on sides (Fig. 12); venter dark dusky with a light band on each side (Fig. 13). Posterior median eyes 0.9 diameter of anterior medians, anterior laterals 0.8 diameter, posterior laterals 0.6. Anterior median eyes 0.8 diameter apart, 1.2 from laterals. Posterior median eyes 0.5 their diameter apart, 2.5 from laterals. Abdomen subspherical. Total length 10.3 mm. Carapace 4.6 mm long, 3.6 wide. First femur 4.5 mm, patella and tibia 5.7, metatarsus 4.4, tarsus 1.5. Second patella and tibia 4.8 mm, third 3.1, fourth 4.6.

Male holotype. Carapace orange, sides of thorax dusky. Labium, endites dark dusky. Sternum orange. Coxae light orange; legs light orange with indistinct darker orange rings. Dorsum of abdomen with light area, sides and posterior dusky; venter dusky in center, spinnerets brown. A median longitudinal line in thoracic de-

pression. Posterior median and anterior lateral eyes 0.8 diameter of anterior medians, posterior laterals 0.7 diameter. Anterior median eyes slightly less than their diameter apart, 1 from laterals. Posterior median eyes 0.6 their diameter apart, 2 from laterals. Endite with tooth. First coxa with hook. Second tibia thicker than first, with short strong macrosetae. Abdomen oval. Total length 5.2 mm. Carapace 2.9 mm long, 2.3 wide. First femur 3.6 mm, patella and tibia 4.6, metatarsus 3.5, tarsus 1.2. Second patella and tibia 3.4 mm, third 1.9, fourth 2.7.

**Variation.** The scape of the epigynum is broken off in most specimens (Fig. 10). Total length of females 6.7 to 10.3 mm, of males 5.2 to 6.7.

**Diagnosis.** The female differs from all other *Araneus* species by having the scape of the epigynum without annuli (Fig. 9). It is the only species in Ecuador and Peru found with the scape torn off with a remaining base that differs from that of *A. bogotensis* (Figs. 17, 24) by the wide scar of the torn scape (Fig. 10). The male's median apophysis of the palpus has a proximal spine as well as one lateral, above which is a lobe (Fig. 14).

*Araneus lechugalensis* (Keyserling), as illustrated by Keyserling, is quite similar to *A. tiganus*, but the female of *A. tiganus* appears to be smaller. The type of *A. lechugalensis* from Lechugal, Peru, has been lost and no specimens were found that matched the illustration exactly (the scape of the epigynum appears torn off). *A. lechugalensis* may be *A. meropes*.

Figures 1–4. *Araneus* genital morphology. 1–4. *A. bogotensis* (Keyserling). 1. Epigynum, ventral. 2. Epigynum, posterior. 3, 4. Male, left palpus, expanded. 3. Subventral. 4. Dorsal. 1, 2 (Dpto. César, Colombia). 3, 4 (Dpto. Valle, Colombia).

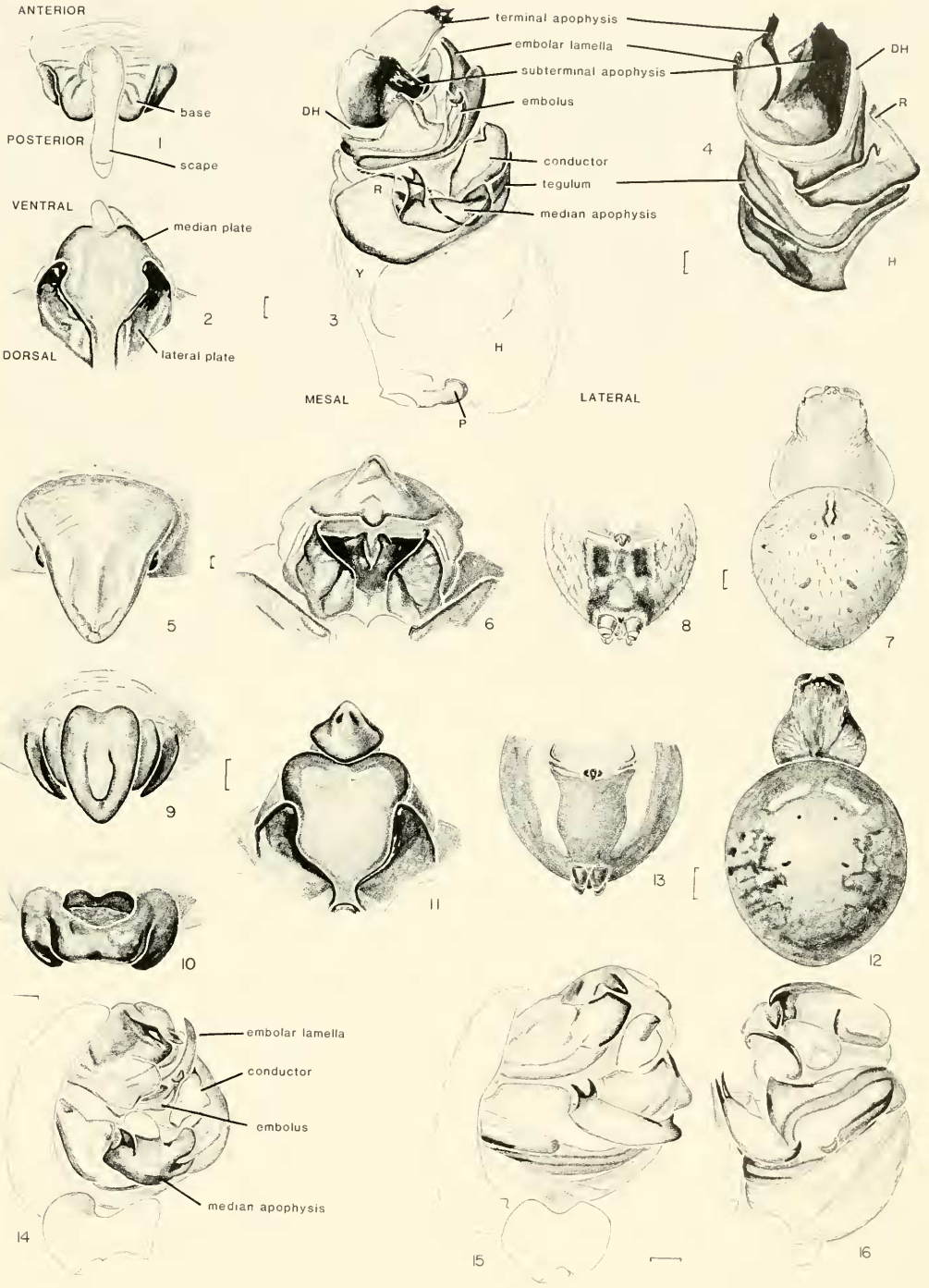
Figures 5–8. *A. sinistrellus* (Roewer), female. 5. Epigynum, ventral. 6. Epigynum, posterior. 7. Dorsal. 8. Abdomen, ventral.

Figures 9–14. *A. tiganus* (Chamberlin). 9–13. Female. 9. Epigynum, ventral. 10. Epigynum, scape torn. 11. Epigynum, posterior. 12. Dorsal. 13. Abdomen, ventral. 14. Male palpus, mesal.

Figures 15, 16. *A. castilho* n. sp., male palpus. 15. Mesal. 16. Ventral.

**Abbreviations.** DH, distal hematodocha. H, hematodocha. P, paracymbium. R, radix. Y, cymbium.

**Scale lines.** 1.0 mm, genitalia 0.1 mm.



*Distribution.* Ecuador and Peruvian mountains, 1000–2200 m (Map 2).

*Records.* ECUADOR *Tungurahua:* Baños, 1600–2000 m, many specimens (AMNH, CAS, MCZ); Pastaza Valley between Baños and Mera, 1000–1700 m, Jan.–Mar. 1949, 10 ♀, 2 ♂ (W. C. MacIntyre, AMNH). *Loja:* Zamora, 1800–2200 m, 28 Oct. 1977, ♀ (L. Peña, AMNH). PERU *Pasco:* Oxapampa, 2500 m, 12 June 1986, 2 ♀ (D. Silva D., MNHSM). *Junín:* Pumamarca, 2 ♀ (K. Jelski, J. Sztolcman, PAN).

*Araneus castilho* new species  
Figures 15, 16; Map 2

*Holotype.* Male holotype from Castilho, Est. São Paulo, Brazil, 17 Oct. 1964 (Exped. Dpto. Zool.), in MZSP no. 3885. The specific name is a noun in apposition after the type locality.

*Description.* Male. Carapace, chelicerae, sternum, legs orange. Dorsum of abdomen white, sides whitish without white pigment spots. Head narrow and eyes small. Posterior median eyes 0.6 diameter of anterior medians, laterals 0.6 diameter. Anterior median eyes 1.4 diameters apart, 1.5 from laterals. Posterior median eyes 1.5 diameters apart, 3.3 from laterals. Endite with tooth. First coxa with hook. Second tibia thicker than first, with a large distal macroseta and some short macrosetae. Abdomen oval, pointed behind. Total length 5.0 mm. Carapace 2.4 mm long, 2.0 wide. First femur 3.2 mm, patella and tibia 4.1, metatarsus 2.7, tarsus 0.9. Second patella and tibia 3.2 mm, third 1.8, fourth 2.7.

*Diagnosis.* The male is distinguished by the relatively long median apophysis (Fig. 15), and, in ventral view, the mushroom-shaped conductor and round embolar lamella (Fig. 16). The unusually small eyes

are distinctive and may make it possible to match the male with a female.

*Araneus bogotensis* (Keyserling)  
Figures 1–4, 17–36; Map 2

*Epeira bogotensis* Keyserling, 1864: 88, pl. 4, figs. 1–6, ♀, ♂. Female lectotype and male and several female paralectotypes here designated from Santa Fé de Bogota, New Granada [Bogotá, Colombia], in BMNH, examined. Keyserling, 1892: 167, pl. 8, fig. 124, ♀.

*Epeira abunda* Taczanowski, 1878: 152, pl. 1, fig. 7, ♀, ♂. Female lectotype here designated, female and male paralectotypes from Uaca Pistana [Huacapistana, Junín, 2500 m], Peru, in PAN, examined.

*Aranea quechuana* Chamberlin, 1916: 250, pl. 19, fig. 1, ♂. Male holotype from Huadquina, 5000 ft [1500 m, Dpto. Cusco, 13°07'S, 72°39'W], Peru, in MCZ, examined. Roewer, 1942: 850. NEW SYNONYMY.

*Aranea abunda*:—Roewer, 1942: 836.

*Neosconella magna* di Caporiacco, 1955: 351, fig. 33, ♀. Female holotype from Rancho Grande, Aragua, Venezuela, in collection of Univ. Central, Caracas, examined. NEW SYNONYMY.

*Aranea bogotensis*:—Roewer, 1942: 838.

*Araneus abundus*:—Bonnet, 1955: 419.

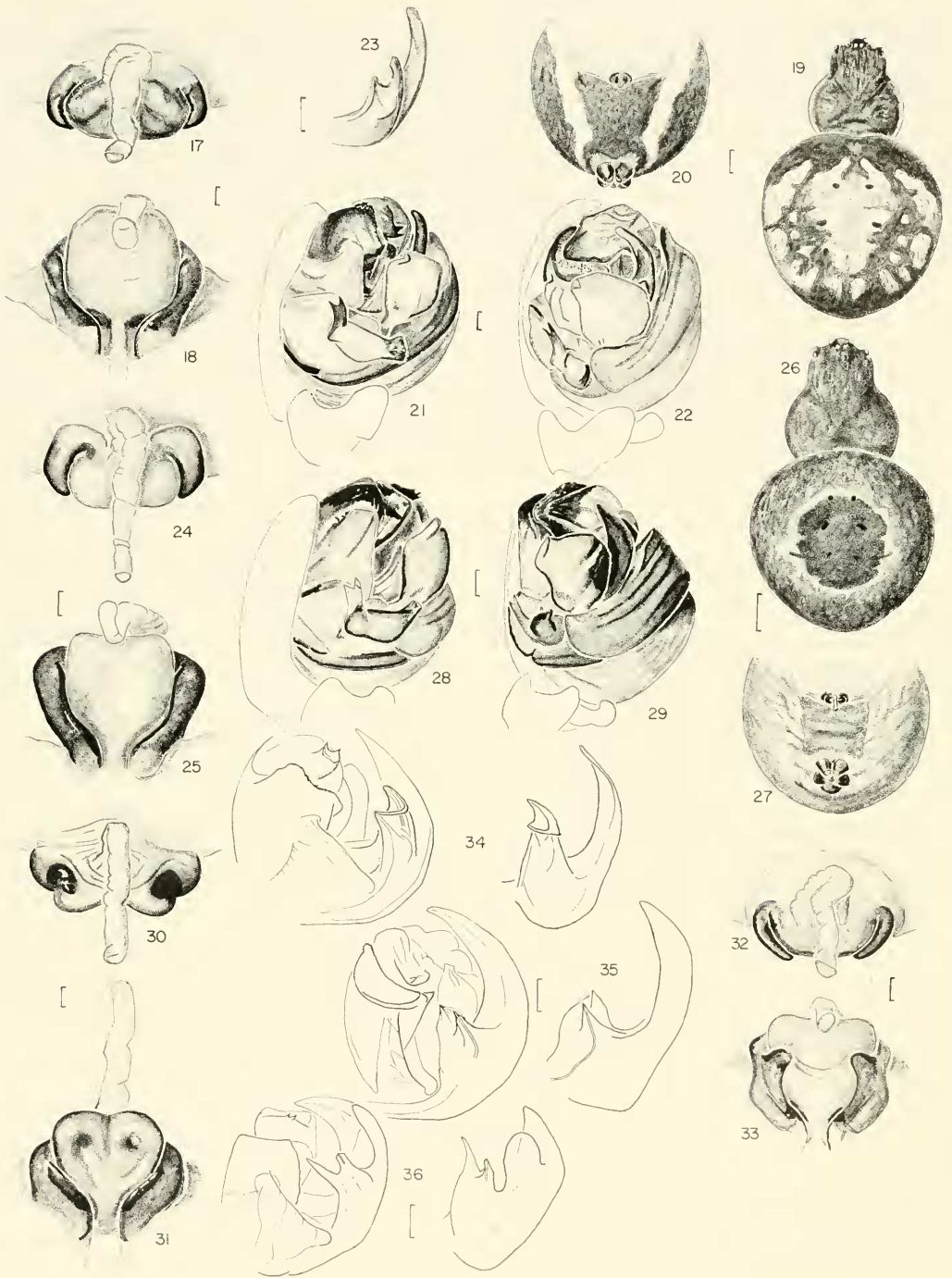
*Araneus bogotensis*:—Bonnet, 1955: 448.

*Araneus quechuanus*:—Bonnet, 1955: 580.

*Description.* Female from Dpto. Valle, Colombia. Carapace dark brown with white hair, eye region black, thoracic border white. Labium, endites, and sternum dark brown. Coxae light orange; legs ringed dark brown and orange. Dorsum of abdomen with brown and white pattern (Fig. 19); venter with a longitudinal light band on each side (Fig. 20). Posterior median eyes and anterior lateral eyes 0.8 diameter of anterior median eyes, posterior lateral eyes 0.7. Anterior median eyes a little less than their diameter apart, 1.5 from laterals; posterior median eyes 0.6 their diameter apart, 2.2 from laterals. Abdomen spherical. Total length 12.0 mm. Carapace

Figures 17–36. *Araneus bogotensis* (Keyserling). 17, 24, 30, 32. Epigynum, ventral. 18, 25, 31, 33. Epigynum, posterior. 19, 26. Female. 20, 27. Female, abdomen, ventral. 21, 22, 28, 29, 34–36. Male, left palpus. 21, 28. Mesal. 22, 29. Ventral. 34–36. Outline of embolus, subterminal and terminal apophyses mesal, and embolus ventral. 34. With embolus cap. 35, 36. Without cap. 35, 36. Doubtful determinations. 17–21, 23 (Dpto. Valle, Colombia). 22 (Pichincha Prov., Ecuador). 24–27, 30, 31. Doubtful species (Volcán Puracé area, Colombia). 28, 29 (Quito, Ecuador). 32, 33 (Bolivia). 34 (Sierra Nevada de Santa Marta, Colombia). 35 (Puracé area, Colombia). 36 (Quito, Ecuador).

Scale lines 1.0 mm, genitalia 0.1 mm.



4.8 mm long, 3.9 wide. First femur 4.8 mm, patella and tibia 5.7, metatarsus 4.3, tarsus 1.5. Second patella and tibia 5.2 mm, third 3.2, fourth 4.7.

Male from Dpto. Valle, Colombia. Carapace orange, dorsum of abdomen black anteriorly on each side with seven pairs of dark transverse marks; sides with black mark; otherwise colored as female. Posterior median and lateral eyes 0.7 diameter of anterior medians. Anterior median eyes their diameter apart, their diameter from laterals. Posterior median eyes 0.6 diameter apart, 2.5 from laterals. First coxa with hook. Second tibia slightly thicker than first. Total length 7.4 mm. Carapace 3.6 mm long, 2.9 wide. First femur 4.4 mm, patella and tibia 5.4, metatarsus 4.0, tarsus 1.5. Second patella and tibia 4.2 mm, third 2.5, fourth 3.5.

*Variation.* Total length of females 6.8 to 12.8 mm, in Colombia 7.7 to 12.8, in Ecuador and Peru 7.5 to 12.3, in Brazil 6.8 to 9.5. Total length of males 4.5 to 7.9 mm, in Colombia 4.5 to 6.7, in Ecuador and Peru 7.3 to 7.9. The largest individuals came from Volcan Puracé area in southern Colombia. These Puracé specimens were very dark, lacking ventral light bands on the abdomen (Figs. 26, 27).

The epigyna of females from central and southern Colombia lack the curved prongs of the lateral plates on the posterior face, which are present in females from all other areas. The female lectotype of *Epeira bogotensis* lacks these prongs (Fig. 18); the female lectotype of *Epeira abunda* has them (Figs. 2, 33). The median plate of the epigynum is square in most females (Fig. 25), but in southern Colombia and Ecuador some individuals have a triangular median plate (Fig. 31). A lobe is present between the lamella and the embolus in the palpus of some males from southern Colombia (normally hidden behind the conductor, Fig. 36). The lamella may be thick in some males from Ecuador. The embolus of the male palpus has two tips: the lateral sclerotized tip contains the duct and varies little (Figs. 34, 36). The other, softer tip, may be drawn out and larger in

some specimens than in others (Figs. 34–36). Between the embolus and subterminal apophysis is an oval, curved, stippled sclerite; in no two males from the mountains of Colombia and Ecuador is it quite the same shape (Figs. 34, 35). The subterminal apophysis is rounded and shiny in many male palpi, in others it has a groove; in no two males does it have quite the same shape.

None of these characters of variation overlap. When I started out with only few specimens, I thought there were several species. Additional collections showed that there were intermediates: females with short prongs of the lateral plates, females with the posterior plate not quite triangular, individuals with indistinct ventral marks, and males with a tiny lobe between lamella and embolus. There are not many males in the collections, and few were collected with females. Most available collections come from Ecuador and southern Colombia, very few from the Peruvian mountains.

In southern Colombia, populations of this widespread species seem to be partly isolated and thus are unusually variable. Collection of a large series would make a more detailed study possible.

*Diagnosis.* *Araneus bogotensis* is separated from *A. granadensis* (Figs. 146, 147) by having the posterior plate of the epigynum square (Fig. 18), and the conductor of the palpus as wide as long (Figs. 21, 22). In *A. granadensis*, the posterior plate is longer than wide (Fig. 147) and has the conductor of the male palpus longer than wide (Fig. 150). *Araneus granadensis* appears to have openings in the lateral plate of the epigynum seen in both ventral and posterior view (Figs. 146, 147); *A. bogotensis* does not (Figs. 17, 18). *Araneus granadensis* has the scape equal in width and straight (Fig. 146), while the scape of *A. bogotensis* is usually slightly bent and wider in some parts than in others (Figs. 17, 24, 30).

*Natural History.* The species has been collected on low vegetation along roadsides in Colombia, on low shrubs around



an open bog on Cerro Neblina, Venezuela, and from webs on a cliff face in Peru, at elevations from 120 to 4000 m.

*Distribution.* From Venezuela and Colombia to Bolivia in the Andes and in the states of Espírito Santo to São Paulo, Brazil; common in Colombia and Ecuador (Map 2).

*Records.* VENEZUELA *Aragua*: Rancho Grande (AMNH, MCZ). *Amazonas*: Neblina Massif, 15 km NNW Pico Phelps (MCZ); Cerro de la Neblina, 1690–2100 m (USNM). *Mérida*: nr. La Azulita (MCZ). COLOMBIA *Magdalena*: Sierra Nevada de Santa Marta, 1500–1900 m (MCZ, JAK, SMF). *César*: Sierra de Perijá, 1500–1600 m (AMNH). *Santander*: Río Suárez, 800–1000 m (AMNH). *Antioquia*: Medellín, 2800 m (MHNM, MCZ); Laguna Guarne, 2700 m (MHNM); Urrao (MHNM); La Estrella, 2000 m (MCZ); Sabaneta, 1600 m (MHNM); San Vicente (MHNM). *Boyacá*: Paramo Alto Belen (MCZ). *Cundinamarca*: Monterredondo, 1200 m (MCZ); Paramo de Chingaza, 3100 m (MCZ); nr. Sasaima (DU); Bogotá (MCZ, AMNH). *Caldas*: nr. Manizales, 2300 m (MCZ). *Meta*: Villavicencio, 400–920 m (AMNH, CAS, MCZ). *Valle*: Yotoco, 1500 m; Lago Calima, 1400 m; nr. Cali, 1000 m; Pichinde, 1700 m; above Fidelia, 2000 m; Arriba de Salidato, 1800 m; above Habana; nr. Queremal (all MCZ); E Caicedonia (CAS); 10 km W Cali, 1630 m (CAS); Cali (AMNH). *Huila*: 19 km E Sta. Leticia, 2300 m (MCZ); Paramo Puracé, 3400 m (MCZ, JAK). *Cauca*: nr. Silvia, betw. Mondomo and Piendamó (both MCZ). *Nariño*: La Cruz, 2450 m; La Planada, 1800 m (both MCZ); 6.5 km S La Unión (CAS). *Putumayo*: Sibundoy, 2200–2600 m (MCZ). ECUADOR *Pichincha*: Quito, 2500 m (CAS, MECN); Río Pilatón (MCZ); 16 km SE Santo Domingo, 680 m (MCZ); Machachi (BMNH); Machachi to Pedregal (BMNH); Tandapi, 1300–1500 m (MCZ); Las Palmeras, 2000 m (MECN); Niebli (MECN); Chiriboga (MECN); Cumbaya (MECN); 45 km S Quito (CAS); Pasochoa (MECN). *Napo*: Río Topo (CAS); E Pappalacta (AMNH); 6.5 km S Baeza, 1800

m (MCZ). *Cotopaxi*: Macuchi (CAS); W Pilaló (AMNH). *Tungurahua*: Baños, 1850–2000 m (MCZ, CAS); Runtun, Baños, 2300 m (AMNH); Mt. Tungurahua, 3800 m (AMNH). *Chimborazo*: Volcán Chimborazo, 3600–4000 m (BMNH); 48 km S Alausí (CAS). *Bolívar*: Balzapamba (AMNH). *Morona-Santiago*: Wakani, Chiguasa (MCZ). *Azuay*: Lago Zurucuchi, 18 km W Cuenca (CAS); Reserva de Lagunas (MECN); Tinajillas, 3100 m (MCZ). *Loja*: Zamora to Loja, 2000–2500 m (MCZ); Cord. de Celica, Alamor, 1100–2200 m (AMNH). PERU *Piura*: Ayabaca (CAS). *Cajamarca*: Hacienda Taulis (MHNSM); Montaña di Nancho, 3000 m (PAN); Chota, 2600–2700 m (CAS). *La Libertad*: Yalen, 2900 m (MHNSM); Huamachuco, 3200 m (CAS). *Ancash*: Puma nr. Huaraz, 4000 m (AMNH). *Huánuco*: Carpish, Huánuco Mts. (CAS); Sariapamp, 3600 m (CAS). *Pasco*: Oxapampa (CAS, MHNSM). *Lima*: Río Cañete, betw. Yauyos and Magdalena, 2800 m (CAS). *Junín*: Huacapistana (CAS); Maraynioc (PAN); Viena (BMNH); Tarma (CAS); Joras (MHNSM); Amable María (PAN); Pumamarca, 2000 m (PAN). *Cusco*: Machupicchu (AMNH, USNM); Lucma, 2000 m (MCZ); Torontoy Canyon, 2000–2200 m (AMNH); Río Marcapata (BMNH); Atalaya (USNM). *Puno*: Limbani, Carabaya, 2900 m (BMNH). *Ayacucho*: San Miguel, 2000 m (MCZ). BOLIVIA *La Paz*: Yungas del Palmar (ZSM); Tarata, Río Zongo, 3200 m (AMNH); Río Coroico, 1400–1600 m (AMNH); betw. Yungas and La Paz (IRSNB). BRAZIL *Espírito Santo*: Castelo (AMNH). *Rio de Janeiro*: Serra dos Órgãos, 1850 m (MCZ); Itatiaia, 1200–1400 m (AMNH, MZSP); Santa Maria Magdalena (MNRJ). *São Paulo*: Bosque de Saúde, São Paulo (MZSP); Itaim (MZSP); São José do Barreiro, S Bocaina, 1960 m (AMNH).

*Araneus aurantifemuris* (Mello-Leitão)  
new combination

Figures 37–41; Map 2

*Metepeira aurantifemuris* Mello-Leitão, 1942: 402, figs. 21, 22, ♀. Female holotype from Tirol, Chaco Prov., Argentina, in MLP, examined. Brignoli, 1983: 275.

*Description.* Female from Córdoba. Carapace orange with a median darker streak. Chelicerae, labium, endites orange. Sternum orange. Coxae orange; legs orange with a dark ring on distal end of fourth tibia; fourth metatarsus and tarsus dark. Dorsum of abdomen with white pigment spots (Fig. 39); venter with a white square between epigynum and spinnerets consisting of small white spots. Posterior median eyes same diameter as anterior medians, anterior laterals 0.8 diameter, posterior laterals 1. Anterior median eyes 1.3 diameters apart, 1.4 from laterals. Posterior median eyes 0.6 their diameter apart, 2 from laterals. Abdomen spherical (Fig. 39). Total length 6.0 mm. Carapace 2.5 mm long, 2.1 wide. First femur 2.8 mm, patella and tibia 3.1, metatarsus 2.5, tarsus 0.8. Second patella and tibia 2.6 mm, third 1.6, fourth 2.3.

Male from Córdoba. Color as in female, including white pigment spots on abdomen, but without dark rings on fourth legs. Posterior median eyes 0.8 diameter of anterior medians, anterior laterals 0.5 diameter, posterior laterals 0.5. Anterior median eyes their diameter apart, 0.9 from laterals. Posterior median eyes 0.6 diameter apart, 2 from laterals. Endite with tooth. First coxa with hook. Second tibia only slightly thicker than first, without short macrosetae. Abdomen oval. Total length 4.6 mm. Carapace 2.5 mm long, 1.9 wide. First femur 4.2 mm, patella and tibia 4.9, metatarsus 4.5, tarsus 0.9. Second patella and tibia 3.7 mm, third 1.8, fourth 2.7.

*Diagnosis.* Females have the median plate of the epigynum square in posterior

view (Fig. 38) as in *A. bogotensis* (Fig. 25), females differ by their light coloration and especially the white pigment spots on the abdomen (Fig. 39). The male differs from *A. bogotensis* and others by the shape of the embolus lamella in lateral view of the palpus (Fig. 41) and the curved embolus partly hidden by the lamella in ventral view (Fig. 40).

*Distribution.* The species is known only from northern Argentina (Map 2).

*Records.* ARGENTINA *Corrientes:* Goya, Mar., Apr. 1958, 2 ♀ (J. Scarpa, MACN). *Córdoba:* Calamuchita, Jan. 1955, ♀, ♂ (Viana, MACN).

### *Araneus blumenau* new species Figures 42–48; Map 2

*Holotype.* Female holotype and male paratype from Blumenau, Est. Santa Catarina, Brazil, ca. 1910 (E. Reimoser), in MZSP, ex MCZ. The specific name is a noun in apposition after the type locality.

*Description.* Female holotype. Carapace with head dark orange, thorax lighter. Chelicerae proximally dark, distally light orange. Labium, endites, sternum orange. Coxae orange; legs orange with indistinct darker rings. Dorsum of abdomen greenish white, anteriorly darker on sides (Fig. 44); venter with median white patches (Fig. 45). Posterior median eyes 0.9 diameter of anterior medians, laterals 0.7 diameter. Anterior median eyes 1.2 diameters apart, 1.4 from laterals. Posterior median eyes 0.6 diameter apart, 2.3 from laterals. Abdomen spherical, slightly wider than long (Fig. 44). Total length 7.7 mm. Carapace 2.8 mm long, 2.5 wide. First femur 2.9 mm, patella and tibia 3.4, meta-

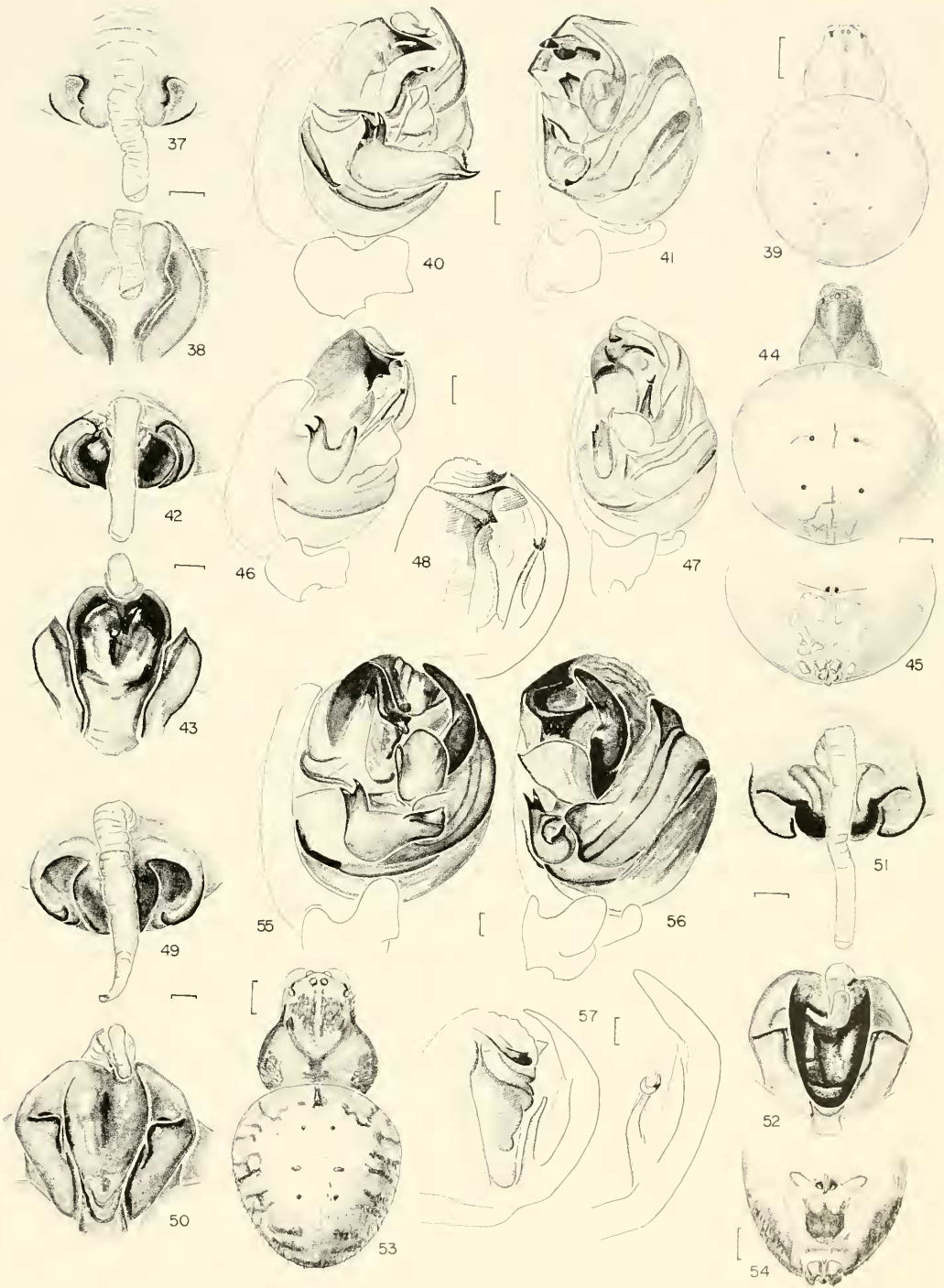
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Figures 37–41. *Araneus aurantiifemur* (Mello-Leitão). 37–39. Female. 37. Epigynum, ventral. 38. Epigynum, posterior. 39. Dorsal. 40, 41. Male, left palpus. 40. Mesal. 41. Ventral.

Figures 42–48. *A. blumenau* n. sp. 42–45. Female. 42. Epigynum, ventral. 43. Epigynum, posterior. 44. Dorsal. 45. Abdomen, ventral. 46–48. Male palpus. 46. Mesal. 47. Ventral. 48. Embolus, subterminal and terminal apophyses, mesal.

Figures 49–57. *A. omnicolor* (Keyserling). 49–54. Female. 49–51. Epigynum, ventral. 50, 52. Epigynum, posterior. 49, 50 (São Paulo, Brazil). 51, 52 (Paraná, Brazil). 53. Dorsal. 54. Abdomen, ventral. 55–57. Male palpus. 55. Mesal. 56. Ventral. 57. Embolus, without cap, subterminal and terminal apophyses and embolus with cap, right.

*Scale lines.* 1.0 mm, genitalia 0.1 mm.



tarsus 2.8, tarsus 0.9. Second patella and tibia 3.0 mm, third 1.8, fourth 2.7.

Male from Blumenau. Cephalothorax in poor condition, but color as in female. Abdomen with dorsal white wedge-shaped mark pointing posteriorly, venter with a white band on each side from genital area to spinnerets, and some white spots behind genital groove. Posterior median eyes same diameter as anterior medians, laterals 0.8 diameter. Anterior median eyes 1.5 diameters apart, 1.5 from laterals. Posterior median eyes slightly less than 1 diameter apart, slightly less than 2 from laterals. Endite with tooth. First coxa with hook. Second tibia thicker than first, with macrosetae. Abdomen oval, longer than wide. Total length 4.0 mm. Carapace 2.0 mm long, 1.1 wide. First femur 2.7 mm, patella and tibia 3.4, metatarsus 2.7, tarsus 0.7. Second patella and tibia 2.7 mm, third 1.2, fourth 1.9.

*Variation.* The abdomen of a specimen from Uruguay is green. Total length of females 5.7 to 7.7 mm, of males 3.9 to 5.8.

*Diagnosis.* The female is lighter colored than is *A. bogotensis* and has the median plate of the epigynum in posterior view projecting ventrally, beyond the lateral plates, and the median plate wide dorsally (Fig. 43). The palpus differs from that of similar species by the U-shaped median apophysis, the long straight embolus (Figs. 46–48), and wide embolus lamella (Fig. 47).

*Distribution.* Southern Brazil to northern Argentina (Map 2).

*Paratypes.* URUGUAY *Río Negro:* Arroyo Negro, 15 km S Paysandú, 2 Jan. 1963, ♀ (R. G. van Gelder, AMNH). ARGENTINA *Salta:* Martín García, ♀ (Viana, MACN). *Santa Fé:* Delta de Paraná, Río Caragatay, Apr. 1940, ♂ (F. Monrós, MACN). *Entre Ríos:* Victoria, Dec. 1964, ♂ (M. E. Galiano, MEG). *Buenos Aires:* Isla Martín García, ♀, ♂, 2 Dec. 1965 (M. E. Galiano, MEG); Sierra de la Ventana, Nov. 1954, ♀ (Fritz, MACN); “Guilures,” ♂ (Viana, MACN); Buenos Aires, ♂ (1942) MACN).

### *Araneus omnicolor* (Keyserling)

Plate 1; Figures 49–57; Map 2

*Epeira omnicolor* Keyserling, 1893: 210, pl. 10, fig. 155, ♀. Female holotype from Est. Espírito Santo, Brazil, in BMNH, examined.

*Aranea omnicolor:*—Roewer, 1942: 849.

*Neosconella farinosa* Mello-Leitão, 1941a: 152, pl. 1, fig. 2, 48, ♀. Female holotype from Salta, Argentina, in MLP, examined. NEW SYNONYMY.

♀*Larinia albosigillata* Mello-Leitão, 1947: 247, fig. 13, imm. Immature holotype from Paraná, Paraná, Brazil, in MHNC, examined. NEW SYNONYMY.

*Araneus omnicolor:*—Bonnet, 1955: 560.

*Araneus farinosus:*—Brignoli, 1983: 262.

*Note.* The female holotype of *A. farinosa* does not have the median bulge of the epigynum constricted anteriorly in ventral view, but has the diagnostic lobes on the lateral plates in posterior view.

*Description.* Female from São Paulo. Carapace orange with darker marks on head and sides of thorax (Fig. 53). Labium, endites dark brown; sternum dark brown with median anterior orange streak. Coxae orange; first to third legs with indistinct dark rings, fourth with contrasting rings. Dorsum of abdomen with indistinct transverse lines on the sides (Fig. 53); venter with black square (Fig. 54). Carapace with down. Posterior median eyes same diameter as anterior medians, anterior laterals 0.8 diameter, posterior laterals 0.7. Anterior median eyes a little less than their diameter apart, 1.2 from laterals. Posterior median eyes 0.6 diameter apart, a little less than 2 from laterals. Abdomen oval, hairy. Total length 9.7 mm. Carapace 4.1 mm long, 3.5 wide. First femur 4.9 mm, patella and tibia 6.2, metatarsus 4.2, tarsus 1.4. Second patella and tibia 5.2 mm, third 2.9, fourth 4.5.

Male from São Paulo. Color as in female. Posterior median eyes 0.8 diameter of anterior median eyes, lateral eyes 0.6 diameter. Anterior median eyes their diameter apart, a little less than their diameter from laterals. Posterior median eyes 0.6 diameter apart, 2 from laterals. Endite with tooth. First coxa with hook. Second tibia thicker than first. Total length 6.7 mm. Carapace 3.6 mm long, 2.8 wide.

First femur 4.8 mm, patella and tibia 5.7, metatarsus 3.9, tarsus 1.2. Second patella and tibia 4.5 mm, third 2.4, fourth 3.5.

*Note.* Males and females have been collected together several times.

*Variation.* A photograph of a live female (Plate 1) shows the abdomen shaded brown with some red marks anteriorly and white marks posteriorly and on the sides. Total length of females 7.2 to 10.7 mm, of males 4.5 to 6.7. Although the area between the posterior median eyes is always light in color, the carapace is quite variable and may be dark or light in males and females. The scape of the epigynum may be nearly pointed (Fig. 49) or wide at the distal end (Fig. 51). The median plate in ventral view may be more or less bulging.

*Diagnosis.* The female can easily be separated from similar species by the 90° angle of the median lobes of the lateral plates and the oval, bulging median plate in posterior view (Figs. 50, 52). The median plate, unlike that of *A. lathyrinus* (Fig. 86) has no depressions. It has a variable number of dorsal transverse grooves and appears almost segmented (Figs. 50, 52), unlike that of *A. vincibilis* (Fig. 65).

The male can be separated from similar species by the relatively wide embolar lamella (Figs. 55, 56) and the gap between the tip of the embolus and the lamella (Fig. 57). Also, the terminal apophysis appears longer and seems to hang down toward the embolus tip (Figs. 55, 57).

*Natural History.* Specimens have been collected in a forest and in vegetation of a wet roadcut in Tijuca National Park and in an undisturbed tall forest in Paraguay.

*Distribution.* From Bahia state, Brazil, to Buenos Aires Province, Argentina (Map 2).

*Records.* BRAZIL *Bahia:* Bahia Galadea [?], ♀ (ZMK). *Minas Gerais:* Caxambu, ♀ (MCZ). *Rio de Janeiro:* Serra dos Orgãos, 1000–1800 m, 2 ♀ (MCZ); Pico da Tijuca, 500–950 m (MCZ); Parque Nac. Itatiaia, 1200–1400 m, ♀, ♂ (AMNH); Rio de Janeiro, ♀ (AMNH); Teresópolis, 2 ♀ (AMNH). *São Paulo:* São Paulo, Jardim Botânico, ♀,

♂ (MCZ, AMNH); Itu, ♂ (MCN); Nova Europa, ♀ (MZSP); Cocaia, ♀ (MZSP); Barueri, ♀ (MZSP). *Paraná:* Curitiba, 2 ♀ (MCN); Araucária, ♀ (MZSP). *Santa Catarina:* Pinhal, ♀ (AMNH). *Rio Grande do Sul:* Porto Alegre, 2♀, ♂ (MCN); Caxias do Sul, ♀ (MCN); Vacaria, ♂ (MCN); São Leopoldo, ♀ (MCN); Triunfo, 2♀ (MCN); Esmeralda, ♀ (MCN); Canela, 4♀ (MCN); Dois Irmãos, ♀ (MCN); Montenegro, ♀ (MCN); Caçapava do Sul, ♀ (MCN). PARAGUAY *Amambay:* Parque Nac. Cerro Corá, 2♀ (IBNP, MCZ). *Alto Paraná:* Km 12 de Stroessner, ♀ (IBNP). *Paraguarí:* Cerro Acahai, ♀ (IBNP). ARGENTINA *Salta:* Tabacal, ♀ (MACN). *Formosa:* Formosa, ♂ (MACN). *Buenos Aires:* Punta Lara, ♀ (MEG).

*Araneus unanimitus* (Keyserling)  
Plate 1; Figures 58–63; Map 2

*Epeira unanima* Keyserling, 1880: 306, pl. 4, fig. 9, ♀. Female holotype from Nova Friburgo, Est. Rio de Janeiro, Brazil, in BMNH, examined; 1892: 147, pl. 7, fig. 108, ♀.

?*Epeira biplagiata* Bertkau, 1880: 86, fig. 30. Immature specimens from São João del Rei (Minas Gerais) and Theresopolis (Teresópolis, Est. Rio de Janeiro), Brazil, lost. Not in Alexander König Museum, Bonn, Germany, SMF, IRSNB, BMNH. NEW SYNONYMY.

*Aranea unanima:*—Roewer, 1942: 855.

*Aranea biplagiata:*—Roewer, 1942: 837.

*Araneus unanimitus:*—Bonnet, 1955: 625.

*Araneus biplagiatus:*—Bonnet, 1955: 443

*Note.* The white patches on the immature specimens of *E. biplagiata* illustrated by Bertkau suggest that they belong to this species.

*Description.* Female from Rio Grande do Sul (MNRJ). Carapace orange. Chelicerae, labium, endites orange. Sternum, legs orange. Dorsum of abdomen with white patches (Fig. 60); venter white around anterior margin. Posterior median eyes same diameter as anterior medians, anterior laterals 1 diameter, posterior laterals 0.8. Anterior median eyes 1.2 diameters apart, 1.4 from laterals. Posterior median eyes 0.5 diameter apart, 2.4 from laterals. Abdomen spherical, soft (Fig. 60). Total length

7.5 mm. Carapace 3.5 mm long, 3.0 wide. First femur 4.0 mm, patella and tibia 4.8, metatarsus 3.5, tarsus 1.3. Second patella and tibia 3.9 mm, third 2.6, fourth 3.7.

Male from Rio Grande do Sul. Color as in female. Posterior median eyes 0.8 diameter of anterior medians, laterals 0.6 diameter. Anterior median eyes 1 diameter apart, 1 from laterals. Posterior median eyes 0.6 diameter apart, 2.3 from laterals. Endite with tooth. First coxa with hook. Second tibia thicker than first, with long and short macrosetae. Abdomen oval. Total length 7.4 mm. Carapace 3.8 mm long, 3.1 wide. First femur 4.6 mm, patella and tibia 5.7, metatarsus 3.7, tarsus 1.1. Second patella and tibia 4.4 mm, third 2.6, fourth 3.5.

*Variation.* Total length of females 6.7 to 10.1 mm, of males 4.6 to 5.9. The photograph of a living female (Plate 1) shows the carapace and legs to be green, the abdomen glossy light green with a reddish area on each side. Some specimens have a brown patch on the chelicerae or the head, and a few have irregularly spaced brown rings on legs.

*Diagnosis.* This species differs from related ones in having almost no black pigment, even around the eyes. In ventral view the epigynum has a pair of slits whose anterior end is covered by a hood (Fig. 58) and in posterior view the median plate is almost pentagonal in shape (Fig. 59).

The palpus has a relatively long, slightly curved embolus approaching a lobe of the edge of the wide lamella (Fig. 63), the subterminal apophysis is swollen and en-

tire (Fig. 63), and the conductor is twice as long as wide (Fig. 62).

*Natural History.* The species has been found in a forested area in the Tijuca National Park and in a tall undisturbed forest in Paraguay.

*Distribution.* From Bahía State, Brazil, in the north to Río Negro Province, Argentina, in the south (Map 2).

*Paratypes.* BRAZIL *Bahia:* Salvador, ♀ (AMNH). *Rio de Janeiro:* Rio de Janeiro ♀ (AMNH, MNRJ); Parque Nac. Tijuca, ♀ (MCZ); Petrópolis, ♀ (MNRJ). *São Paulo:* Itu, ♂ (MZSP, AMNH); Caraguatatuba, ♀, ♂ (MZSP); Boracéia, ♀, ♂ (MZSP); São Paulo, ♀ (MZSP, AMNH); Serra Negra ♀, ♂ (MZSP); Cocaia, ♀, ♂ (MZSP); Santo Amaro, ♀ (MZSP); Alto da Serra, ♀ (MZSP); Ilha da Vitória, ♀ (MZSP); S. Bernardo, ♀, ♂ (MZSP). *Paraná:* Curitiba, ♀, ♂ (MZSP, MNRJ); Vila Velha, ♀, (MZSP). *Santa Catarina:* Corupá, ♀ (AMNH); Pinhal, ♀ (AMNH); Morro dos Conventos Araranguá, ♂ (MCN). *Rio Grande do Sul:* São Borja Garruchos, ♂ (MCN); Tramandaí, ♂ (MCN); Canela, ♀, ♂ (MCN); São Leopoldo, ♀ (MZSP); Porto Alegre, ♀, ♂ (MCN); São Jerônimo, ♂ (MCN); Rio Grande, ♂ (MCN); General Câmara, ♀ (MCN); Pelotas, ♀, ♂ (AMNH, MCN); Novo Hamburgo, ♀ (MCN); Vila Oliva, Caxias do Sul, 2♀, ♂ (MCN); Berto Ciro Canoas, ♂ (MCN). PARAGUAY *Paraguarí:* Ybycuí, ♀, ♂ (IBNP). *Caazapá:* Parque Nac. Caaquazú, 2♀ (IBNP). ARGENTINA *Misiones:* Cataratas de Iguacu, ♀ (MEG); Tobuna, ♀ (AMNH). *Formosa:* Est. Gaiacolá, R. Pilagá, ♂ (MACN). *Río Negro:* El Bolsón, ♂ (AMNH).

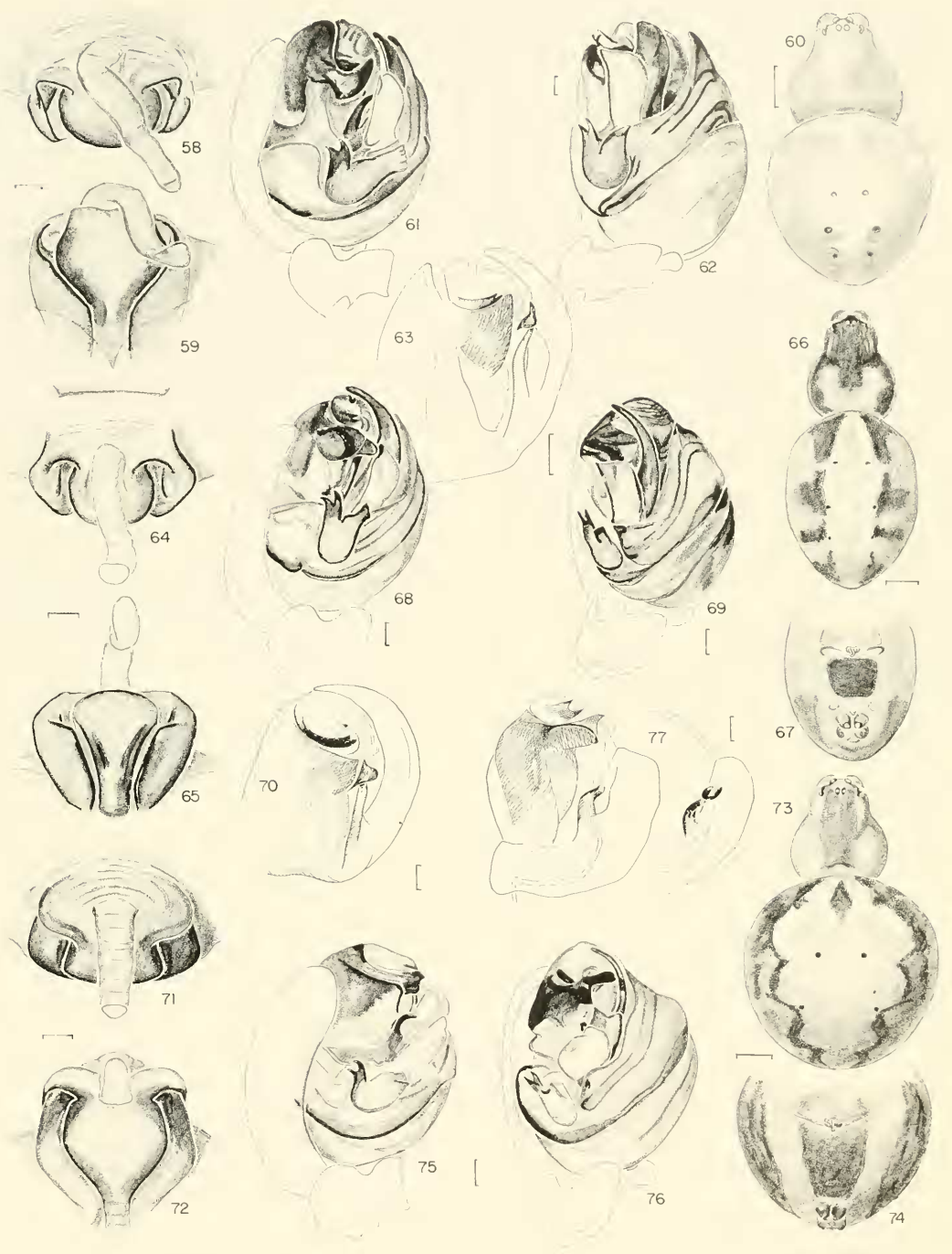
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Figures 58–63. *Araneus unanimus* (Keyserling). 58–60. Female. 58. Epigynum, ventral. 59. Epigynum, posterior. 60. Dorsal. 61–63. Male, left palpus. 61. Mesal. 62. Ventral. 63. Embolus with cap, subterminal and terminal apophyses.

Figures 64–70. *A. vincibilis* (Keyserling). 64–67. Female. 64. Epigynum, ventral. 65. Epigynum, posterior. 66. Dorsal. 67. Abdomen, ventral. 68–70. Male. 68. Palpus, mesal. 69. Palpus, ventral. 70. Embolus with cap, subterminal and terminal apophyses.

Figures 71–77. *A. corporosus* (Keyserling). 71–74. Female. 71. Epigynum, ventral. 72. Epigynum, posterior. 73. Dorsal. 74. Abdomen, ventral. 75–77. Male. 75. Palpus, mesal. 76. Palpus, ventral. 77. Embolus without cap left, subterminal and terminal apophyses and with cap right.

*Scale lines.* 1.0 mm, genitalia 0.1 mm.



*Araneus vincibilis* (Keyserling)  
Plate 1; Figures 64–70; Map 2

*Epeira vincibilis* Keyserling, 1893: 2090, pl. 9, fig. 154, ♀. Female holotype from Rio Grande do Sul, Brazil, in BMNH, examined.

*Aranea vincibilis*:—Roewer, 1942: 856.

*Aranea vincibilis*:—Bonnet, 1955: 630.

**Description.** Female from São Paulo. Carapace dark brown with orange streak on each side of head and an orange U-shaped patch on thorax (Fig. 66). Labium and endites dark brown. Sternum dark brown with median white patch. Coxae orange; legs orange with dark brown rings. Dorsum of abdomen with median light band, pointed at each end, and dark patches on each side (Fig. 66); venter with square dark patch (Fig. 67). Posterior median eyes 0.7 diameter of anterior median eyes, lateral eyes 0.6 diameter. Anterior medians a little less than their diameter apart, their diameter from laterals. Posterior medians 0.6 diameter apart, 2 from laterals. Abdomen oval (Fig. 66). Total length 8.5 mm. Carapace 3.3 mm long, 2.8 wide. First femur 3.7 mm, patella and tibia 4.5, metatarsus 3.3, tarsus 1.2. Second patella and tibia 3.9 mm, third 2.3, fourth 3.5.

Male from Triunfo, Rio Grande do Sul. Carapace as in female, except head light with median brown patch; thorax as in female. Sternum light orange. Posterior median and lateral eyes 0.7 diameter of anterior medians. Anterior medians 0.4 diameter apart, 0.6 from laterals. Posterior medians 0.4 diameter apart, 1.5 from laterals. Endite with tooth. First coxa with hook. Abdomen oval. Second tibia thicker than first, with area of short macrosetae. Total length 5.8 mm. Carapace 3.1 mm long, 2.3 wide. First femur 3.8 mm, patella and tibia 4.6, metatarsus 3.4, tarsus 1.2. Second patella and tibia 3.2 mm, third 2.0, fourth 3.0.

**Variation.** Total length of females 7.2 to 9.9 mm, of males 4.4 to 5.8.

**Diagnosis.** All individuals, female and male, have a dark pattern on the thoracic part of the carapace (Fig. 66), although

the head may be light. In ventral view, the epigynum (Fig. 64) resembles those of *A. omnicolor* (Fig. 49) and *A. unanimus*. In posterior view (Fig. 65) it has a ventrally round median plate (unlike the pentagonal plate of *A. unanimus*, Fig. 59) and lacks the median right-angled lobes of the lateral plates of *A. omnicolor* (Fig. 50).

The male has a distinctive median apophysis, its sides being almost parallel (Fig. 68), and a unique embolus cap that fits against the subterminal apophysis (Fig. 70). If the cap is missing (in mated individuals), the tip of the embolus is slightly bent toward the subterminal apophysis, away from the lamella and conductor.

**Natural History.** There is only one collection with both males and females. The consistent carapace pattern indicates that they belong together. There are more males than females in collections, suggesting that females may inhabit tree tops or some other place out of the reach of collectors.

**Distribution.** From Rio de Janeiro State, Brazil, to Caaguazú Department of Paraguay (Map 2).

**Records.** BRAZIL *Rio de Janeiro*: Serra dos Órgãos, 2000 m, ♂ (MCZ); Teresópolis, ♀ (AMNH); Rio de Janeiro, ♀ (AMNH); Tijuca, ♀ (MCZ). *São Paulo*: Jardim Botânico, São Paulo, ♀, ♂ (AMNH, MCZ, MZSP). *Paraná*: Curitiba, ♀ (MNRJ). *Rio Grande do Sul*: Triunfo, ♀, ♂ (MCN); Montenegro, ♂ (MCN); Garruchos, ♂ (MCN); Garruchos, Borja, ♂ (MCN); Canela, ♂ (MCN); Bom Jesus, ♂ (MCN); São Francisco de Paula, ♂ (MCN); Barra do Ribeiro, ♀ (MCN). PARAGUAY *Caaguazú*: Colônia Wolter Insfran, ♀ (IBNP). ARGENTINA *Misiones*: Eldorado, imm. ♂ (AMNH).

*Araneus corporosus* (Keyserling)  
Figures 71–77; Map 2

*Epeira corporosa* Keyserling, 1892: 189, pl. 9, fig. 140, ♀. Female holotype from Taquara [Rio Grande do Sul], Brazil, in BMNH, examined.

*Aranea corporosa*:—Roewer, 1942: 840.

*Metepeira delineata* Mello-Leitão, 1943: 105, fig. 5, ♀. Female holotype from Cabaña [?], Córdoba, Ar-



gentina, in MLP, examined. Brignoli, 1983: 275. NEW SYNONYMY.

*Eustala lactea* Mello-Leitão, 1944: 329. Male holotype from Tigre, Buenos Aires Prov., Argentina, in MLP, examined. Brignoli, 1983: 269. NEW SYNONYMY.

*Larinia nobilis* Mello-Leitão, 1944: 331, fig. 15, ♂. Male holotype from Buenos Aires, Argentina, in MLP, examined. Brignoli, 1983: 272. NEW SYNONYMY.

*Metepeira arabesca* Mello-Leitão, 1947: 248, figs. 14, 15, ♀. Female holotype from Barigui, Mun. de Curitiba, Paraná, Brazil, in MHNC, examined. NEW SYNONYMY.

*Araneus corporosus*:—Bonnet, 1955: 470.

**Description.** Female from Campos do Jordão, São Paulo. Carapace orange, head darker with white setae. Chelicerae, labium, endites dark orange. Sternum light orange, darker anteriorly. Coxae orange; legs orange with darker rings. Dorsum of abdomen with dusky folium outline (Fig. 73); venter with black trapezoid and a light band on each side, dark to sides of bands (Fig. 74). Posterior median eyes 0.8 diameter of anterior medians, anterior laterals 0.7 diameter, posterior laterals 0.6. Anterior median eyes 1 diameter apart, 1 from laterals. Posterior median eyes 0.7 diameter apart, 2.4 from laterals. Abdomen spherical (Fig. 73). Total length 7.0 mm. Carapace 3.1 mm long, 2.4 wide. First femur 3.1 mm, patella and tibia 3.5, metatarsus 2.7, tarsus 1.0. Second patella and tibia 2.9 mm, third 1.9, fourth 2.7.

Male from Minas Gerais. Color as in female, but without rings on legs, and abdomen with only dorsal longitudinal white bands. Posterior median eyes 0.7 diameter of anterior medians, anterior laterals 0.6 diameter, posterior laterals 0.5. Anterior median eyes 1 diameter apart, 1.2 from laterals. Posterior median eyes 0.8 diameter apart, 2.2 from laterals. Endite with tooth. First coxa with hook. Second tibia thicker than first with some short macrosetae. Abdomen oval. Total length 5.6 mm. Carapace 3.0 mm long, 2.3 wide. First femur 3.8 mm, patella and tibia 4.6, metatarsus 3.3, tarsus 1.0. Second patella and tibia 3.5 mm, third 1.9, fourth 2.6.

**Note.** The male has not been collected

with the female; this match is based on the male's similarity to the male of *A. workmani*.

**Variation.** Total length of females 5.2 to 8.3 mm, of males 4.2 to 4.3.

**Diagnosis.** Females are lighter in color than the similar *A. workmani*. As in *A. workmani*, but unlike other related species, *A. corporosus* has the median plate of the epigynum T-shaped in posterior view, but *A. corporosus* differs from *A. workmani* (Fig. 79) in having the median plate much wider than the lateral plates (Fig. 72). Males of *A. corporosus* (Fig. 76) and *A. workmani* (Fig. 83) differ from related species by having the embolus lamella with a shoulder (Figs. 76, 77); *A. corporosus* males differ from males of *A. workmani* (Fig. 82) and all similar species by having a bent embolus (Figs. 75, 77).

**Distribution.** From Minas Gerais, Brazil, to Buenos Aires Province, Argentina (Map 2).

**Records.** BRAZIL *Minas Gerais*: Lavras, ♂ (MCZ). *São Paulo*: Estr. Santos, Juruatuba, ♀ (MZSP); Boruerú, ♀ (MZSP); São Paulo, ♀ (MZSP); Boqueri, ♀ (MZSP); Serra da Bocaina, ♂ (MZSP); Campos do Jordão, 2♀ (MZSP); Mogi das Cruzes, ♀ (MZSP); Itapeva, ♀ (MCZ). *Paraná*: Curitiba, ♀ (MNRJ, MZSP). *Santa Catarina*: Pinhal, ♀ (AMNH). *Rio Grande do Sul*: São Leopoldo, ♀ (MZSP); Esmeralda, ♀ (MCN); Santa Maria, ♀ (MCN); Montenegro, ♀ (MCN); Cambará do Sul, ♀ (MCN); Morro do Itacolomi Gravatai, ♀ (MCN). ARGENTINA *Salta*: 5 km S Jujuy, ♀ (MCZ). *Córdoba*: Valle Hermosa, ♀ (AMNH). *Buenos Aires*: Burzaco, ♀ (MACN); San Miguel, ♀ (MLP); José C. Paz, ♀ (MLP).

### *Araneus workmani* (Keyserling)

Plate 1; Figures 78–84; Map 2

*Epeira workmanni* Keyserling, 1884: 649, pl. 21, fig. 1, ♂. Male holotype from Santa Isabela, Rio Grande do Sul, Brazil, in NMI, examined.

*Aranea workmanni*:—Roewer, 1942: 85.

*Araneus workmani*:—Bonnet, 1955: 632.

**Note.** Since the species was named after the arachnologist T. Workman of Dublin,

Bonnet emended the spelling. Dr. P. J. O'Sullivan, NMI (personal correspondence), wrote that the spelling by Bonnet is correct. Specimens in the BMNH labeled *Epeira workmani* Keyserling [sic] are not the types and do not match Keyserling's illustrations. They are specimens of *Araneus uniformis*.

*Description.* Female from São Bernardo, São Paulo. Carapace dark brown with white setae. Chelicerae proximally orange, distally brown. Labium, endites brown. Sternum orange. Coxae orange; legs orange with dark brown rings. Dorsum of abdomen brown with paired light spots (Fig. 80); venter with two white bands on dark brown (Fig. 81). Posterior median eyes 0.7 diameter of anterior medians, laterals 0.7 diameter. Anterior median eyes 1.1 diameters apart, 1.2 from laterals. Posterior median eyes 0.9 diameter apart, 3.3 from laterals. Abdomen subspherical (Fig. 80). Total length 8.0 mm. Carapace 3.5 mm long, 3.1 wide. First femur 3.9 mm, patella and tibia 4.7, metatarsus 3.4, tarsus 1.2. Second patella and tibia 3.9 mm, third 2.5, fourth 3.5.

Male from São Bernardo, São Paulo. Color much lighter than that of female, mostly light orange. Posterior median eyes 0.7 diameter of anterior medians, laterals 0.6 diameter. Anterior median eyes 0.8 diameter apart, 0.8 from laterals. Posterior median eyes 0.8 diameter apart, 2 from laterals. Endite with tooth. First coxa with hook. Second tibia thicker than first with some short macrosetae. Abdomen oval. Total length 6.0 mm. Carapace 3.2 mm long, 2.7 wide. First femur 4.2 mm, patella and

tibia 5.1, metatarsus 3.4, tarsus 1.2. Second patella and tibia 3.9 mm, third 2.3, fourth 3.1.

*Note.* The first male encountered was collected with females of *A. stabilis*, but subsequently males were found with females here considered *A. workmani*.

*Variation.* Total length of females 6.4 to 10.0 mm, of males 5.2 to 6.1.

*Diagnosis.* Females are much darker in color than females of *A. corporosus*. As in *A. corporosus*, but unlike other related species, *A. workmani* has the median plate of the epigynum T-shaped in posterior view, but *A. workmani* differs from *A. corporosus* (Fig. 72) in having the median plate narrower than the lateral plates (Fig. 79). Males of *A. workmani* and *A. corporosus* differ from related species by having the embolus lamella with a shoulder (Figs. 82–84); *A. workmani* males differ from males of *A. corporosus* (Fig. 77) by having the embolus only slightly curved (Fig. 84).

*Natural History.* Females have been collected in bamboo undergrowths, on the roadside in a forest, and in a forest in Rio de Janeiro State.

*Distribution.* From Espírito Santo State, Brazil, to Buenos Aires Province, Argentina (Map 2).

*Records.* BRAZIL *Espírito Santo*: Morro Moscoso, Vitória, ♀ (MCN). *Rio de Janeiro*: Teresópolis, 1000 m, ♀ (AMNH); Alto da Tijuca, ♀ (MCZ); Pico da Tijuca, 500–950 m, ♀, ♂ (MCZ). *São Paulo*: São Paulo, ♀, ♂ (AMNH, MZSP, MCZ); Cocaia, Santo Amaro, ♀, ♂ (MZSP); São Bernardino, ♀, ♂ (MZSP); Boracéia, ♀, ♂ (MZSP); Campos do Jordão, ♀ (MZSP); Alto da Perdizes, ♀

→

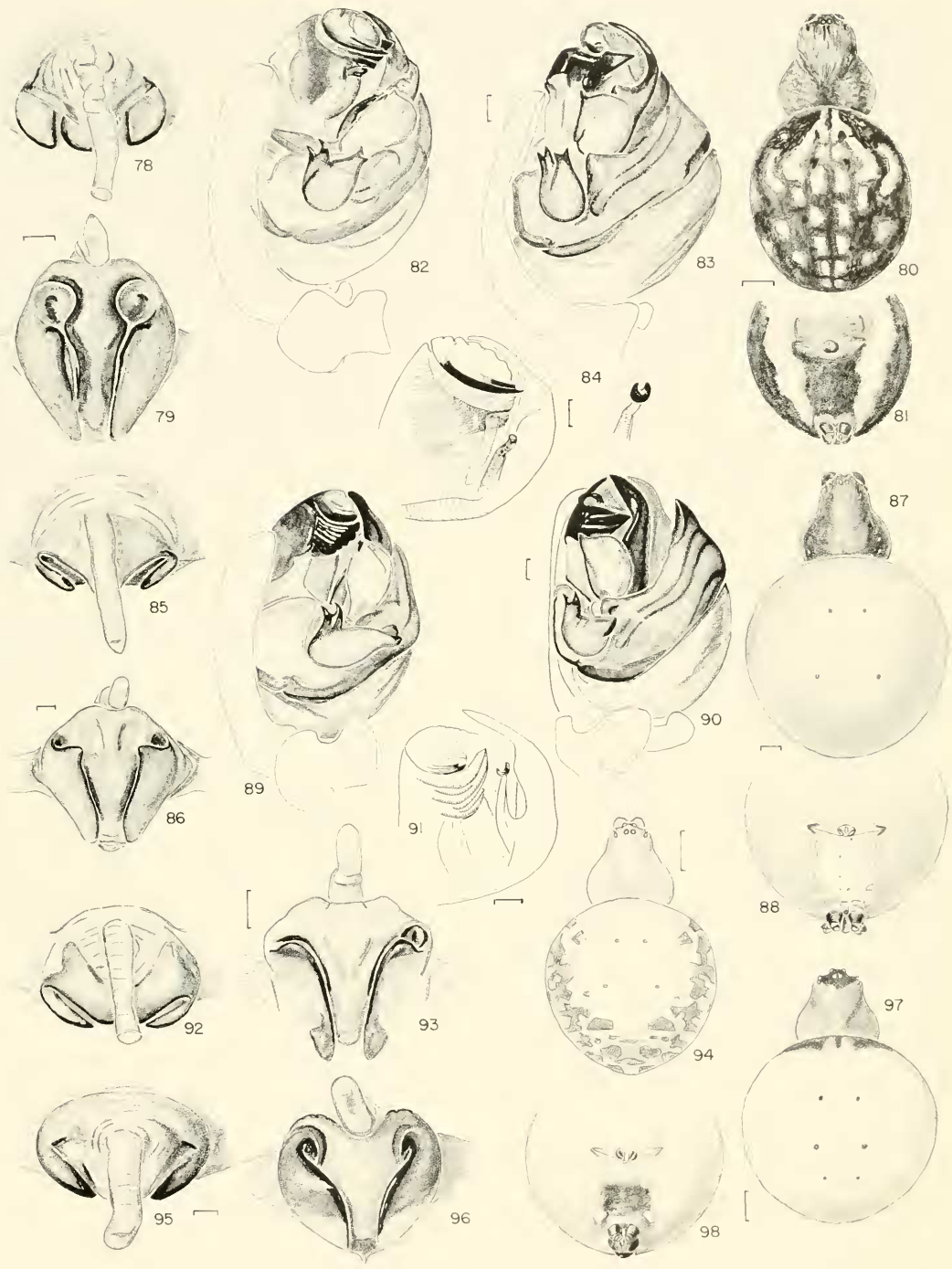
Figures 78–84. *Araneus workmani* (Keyserling). 78–81. Female. 78. Epigynum, ventral. 79. Epigynum, posterior. 80. Dorsal. 81. Abdomen, ventral. 82–84. Male, left palpus. 82. Mesal. 83. Ventral. 84. Embolus without cap, left, subterminal and terminal apophyses, and tip of embolus with cap, right.

Figures 85–91. *A. lathyrinus* (Holmberg). 85–88. Female. 85. Epigynum, ventral. 86. Epigynum, posterior. 87. Dorsal. 88. Abdomen, ventral. 89–91. Male palpus. 89. Mesal. 90. Ventral. 91. Embolus, subterminal and terminal apophyses.

Figures 92–94. *A. orgaos* n. sp., female. 92. Epigynum, ventral. 93. Epigynum, dorsal. 94. Dorsal.

Figures 95–98. *A. schneblei* n. sp., female. 95. Epigynum, ventral. 96. Epigynum, posterior. 97. Dorsal. 98. Abdomen, ventral.

Scale lines 1.0 mm, genitalia 0.1 mm.



(MZSP); Cantareira, ♀ (MZSP); Salesópolis, ♀ (MZSP); Americana, ♀ (MZSP); Campos da Serra, ♀ (MZSP); Piracicaba, ♀ (MZSP); Serra Negra, ♀ (MZSP). *Paraná*: Antonina, ♂ (MNRJ). *Santa Catarina*: Pinhal, ♀ (AMNH); Morro dos Conventes, Araranguá, ♀ (MCN); Corupá, ♀ (AMNH). *Rio Grande do Sul*: Morro Teresópolis, Porto Alegre, ♀, ♂ (MCN); Vacaria, ♀ (MCN); Nova Petrópolis, ♂ (MCN); Pelotas, ♀ (MCN). ARGENTINA *Buenos Aires*: Florencia Varela, ♂ (MACN); Delta de Paraná, ♀, ♂ (MACN, MEC); Punta Lara, ♂ (MACN).

*Araneus lathyrius* (Holmberg)

Figures 85–91; Map 2

*Epeira lathyrius* Holmberg, 1874a: 283, pl. 6, fig. 1. Specimens from Palermo, Belgrano, San Isidro, San Fernando, Las Conchas, Caballito, Flores, Chivilcoy, Navarro, Mercedes, Buenos Aires [all in Buenos Aires Prov.], Argentina, destroyed; 1874b: 95.

*Epeira montevidensis* Keyserling, 1878: 571, pl. 14, fig. 1, 2, ♀, ♂. Two female syntypes marked types, one male and one female with a Keyserling bordered label from Uruguay in BMNH, examined. Syntypes in Stuttgart Museum destroyed in World War II (Renner, 1988); 1892: 148, pl. 7, fig. 109, ♀, ♂.

*Epeira caerulea* Bertkau, 1880: 87, pl. 2, fig. 31, ♀. Four females from "Rio Grande" [?do Sul], lost. First synonymized by Keyserling, 1892.

*Araneus lathyrius*:—Simon, 1897: 1. Synonymized *montevidensis* and *caerulea* with *lathyrius*.

*Aranea lathyrius*:—Roewer, 1942: 845.

*Neosconella lathyrius*:—Bonnet, 1958: 3061.

*Description*. Female from Rio Grande do Sul. Carapace dark brown on sides, midline orange, some white setae on sides of head. Chelicerae, labium, endites brown. Sternum, coxae orange; femora dark brown, indistinctly ringed; legs orange brown. Dorsum of abdomen whitish (Fig. 87); venter with a white square between epigastric groove and spinnerets overlain by brownish coloring (Fig. 88). Posterior median eyes 0.7 diameter of anterior medians, anterior laterals 0.7 diameter, posterior laterals 0.6. Anterior median eyes 1 diameter apart, 1.6 from laterals. Posterior median eyes 0.6 their diameter apart, 3.5 from laterals. Abdomen spherical (Fig. 87). Total length 13.7 mm. Carapace 4.9 mm

long, 4.2 wide. First femur 4.5 mm, patella and tibia 5.9, metatarsus 4.5, tarsus 1.3. Second patella and tibia 4.9 mm, third 3.3, fourth 4.5.

Male from Rio Grande do Sul. Color as in female, except proximal ends of femora light, legs more distinctly ringed and a black band around anterior of abdomen. Posterior median eyes 0.6 diameter of anterior medians, anterior laterals 0.6 diameter, posterior laterals 0.5. Anterior median eyes their diameter apart, their diameter from laterals. Posterior median eyes 0.6 diameter apart, 3 from laterals. Endite with tooth. First coxa with hook. Second tibia thicker than first, with macrosetae. Abdomen oval. Total length 8.6 mm. Carapace 4.7 mm long, 3.6 wide. First femur 6.9 mm, patella and tibia 7.9, metatarsus 6.9, tarsus 1.3. Second patella and tibia 5.9 mm, third 3.1, fourth 4.5.

*Variation*. Total length of females 6.2 to 14 mm, of males 6.4 to 7.4. Freshly preserved specimens are green in color. The carapace is sometimes light, sometimes with two dark bands, one on each side of the thorax.

*Diagnosis*. The female differs from females of similar species without an abdominal pattern by having the epigynum in ventral view with diagonal slits far posterior (Fig. 85). In posterior view the lateral plates have a lobe on each side toward the median as does *A. omnicolor* (Fig. 50), but the median plate has a pair of distinct, ventral, shallow depressions (Fig. 86) not present in *A. orgaos* (Fig. 93), *A. omnicolor* (Fig. 50), or *A. unanimus* (Fig. 59).

The male differs from males of similar species in that the tip of the embolus approaches a lobe of the lamella (Fig. 91) and the subterminal apophysis has a series of ridges separated by grooves (Figs. 89, 91).

*Note*. The first right leg of a male is regenerated and much shorter.

*Natural History*. The egg-sac collected with a female is a woolly sphere the size of the female abdomen and is secured within a curled leaf.

*Distribution.* From Rio de Janeiro State, Brazil, to Buenos Aires Province, Argentina (Map 2).

*Records.* BRAZIL *Santa Catarina:* Pinhal, ♀ (AMNH). *Rio Grande do Sul:* São Leopoldo, ♀, ♂ (MZSP); Est. Ecológica do Taim, ♀, ♂ (MCN); Montenegro, ♀, ♂ (MCN); Dona Francisca, ♀ (MCN); São Sepé, ♀ (MCN); Bagé, ♀ (MCN); Bom Jesus, ♂ (MCN); Itaimbezinho, Cambará do Sul, ♂ (MCN); Est. Ecológ. do Aracun Esmeralda, ♀ (MCN); Canela, ♀ (MCN); Pelotas, ♀ (MCN, AMNH). PARAGUAY *Alto Paraná:* Hernandarias, ♂ (MCZ). *Itapúa:* Capitán Meza, ♀ (IBNP). ARGENTINA *Misiones:* Candelaria, 2♀ (MACN); San Pedro, ♀ (MACN); Eldorado, ♂ (AMNH). *Córdoba:* Calamuchita, ♀ (MACN). *San Luis:* Merlo, ♀ (MACN); Villa Elena, ♀ (MACN). *Buenos Aires:* Moreno, ♀ (MACN); Zelaya, ♀ (MACN).

#### *Araneus orgaos* new species Figures 92–94; Map 2

*Holotype.* Female holotype and female paratype from Serra dos Órgãos, 1000–1500 m, forest, Est. Rio de Janeiro, Brazil, 20 Apr. 1965 (H. Levi), in MZSP, ex MCZ. The specific name is a noun in apposition after the type locality, the Portuguese word for organ.

*Description.* Female holotype. Carapace, sternum orange. Legs orange, fourth tibia, metatarsus, tarsus with distal black rings. Paired dusky marks on sides and posterior of dorsum of abdomen (Fig. 94). Venter with white pigment spots and some dusky pigment in center between epigynum and spinnerets. Posterior median eyes same diameter as anterior median eyes, lateral eyes 0.8 diameter. Anterior median eyes their diameter apart, a little more than their diameter from laterals. Posterior median eyes 0.6 diameter apart, 2 from laterals. Abdomen spherical. Total length 6.4 mm. Carapace 2.7 mm long, 2.3 wide. First femur 3.1 mm, patella and tibia 3.7, metatarsus 2.3, tarsus 0.9. Second patella and tibia 3.0 mm, third 1.8, fourth 2.6.

*Variation.* The lateral plates of the epigynum in some specimens are farther apart than in the specimen illustrated.

*Diagnosis.* This species differs from *A. lathyrinus* (Fig. 86) in lacking the pair of ventral depressions on the posterior median plate of the epigynum (Fig. 93) and from *A. blumenau* (Fig. 43) by the triangular shape of the posterior median plate (Fig. 93).

*Paratypes.* BRAZIL *Est. Rio de Janeiro:* Serra dos Órgãos, 19 Apr. 1965, 2♀ (H. Levi, MCZ). *São Paulo:* Mata do Governor, Inst. Botânico, 4 Mar. 1959, ♀ (L. Lane, AMNH).

*Araneus schneblei* new species  
Figures 95–98; Map 2

*Holotype.* Female from Medellín, Antioquia, Colombia, Jan., Feb. 1963 (P. B. Schneble), in MCZ. The species is named after the collector.

*Description.* Female. Carapace orange, eye region black. Sternum and legs orange. Dorsum of abdomen with tiny white spots, black anteriorly on sides (Fig. 97). Venter with a median black band, spinnerets black (Fig. 98). Carapace without setae. Eyes subequal. Anterior median eyes their diameter apart, 1.7 from laterals. Posterior median eyes 0.6 diameter apart, 3 from laterals. Abdomen spherical. Total length 9.0 mm. Carapace 4.2 mm long, 3.5 wide. First femur 4.4 mm, patella and tibia 5.1, metatarsus 3.7, tarsus 1.1. Second patella and tibia 4.6 mm, third 2.7, fourth 4.0.

*Diagnosis.* In posterior view of the epigynum of *A. schneblei*, the median edge of the lateral plates curls anteriorly (Fig. 96) while that of the Brazilian *A. orgaos* (Fig. 93) curves laterally. The median plate lacks the depressions present in *A. lathyrinus* (Fig. 86) of southeastern South America.

#### *Araneus horizonte* new species Figures 99–104; Map 2

*Holotype.* Female holotype from Belo Horizonte, Minas Gerais, Brazil (C. Mello-Leitão), in MNRJ. The specific name is a noun in apposition after the type locality.

*Description.* Female. Carapace orange with median dark brown band. Chelicerae, labium, endites orange. Sternum orange underlain by white pigment in middle. Coxae orange; legs orange with brown rings. Dorsum of abdomen white with a pair of anterior black marks (Fig. 103); venter with a black patch of indistinct outline (Fig. 104). Posterior median eyes 0.7 diameter of anterior medians, anterior laterals 0.7 diameter, posterior laterals 0.6. Anterior median eyes 0.9 diameter apart, 1.2 from laterals. Posterior median eyes 0.3 their diameter apart, 3 from laterals. Abdomen spherical (Fig. 103). Total length 12.7 mm. Carapace 5.2 mm long, 4.5 wide. First femur 5.2 mm, patella and tibia 6.4, metatarsus 4.9, tarsus 1.8. Second patella and tibia 5.7 mm, third 3.5, fourth 5.4.

*Variation.* Total length of females 8.6 to 12.7 mm. The extent of the dark marks on the carapace is variable. In the epigynum, the characteristic ventral holes in posterior view are elongate in the specimen from Peru, round in the specimens from Minas Gerais. The posterior median plate is longer in the Peruvian female (Fig. 102) than in the Minas Gerais female (Fig. 100).

*Diagnosis.* *Araneus horizonte* is larger than *A. corporosus*, and the epigynum differs in posterior view by having depressions framed by sclerotized rims and by the median plate being pentagonal (Figs. 100, 102). It is very similar to *A. taperae* (Fig. 106), but is distinguished by a narrower posterior median plate (Figs. 100, 102).

*Distribution.* From Amazon area of Colombia to Minas Gerais, Brazil, and Paraguay (Map 2).

*Paratypes.* COLOMBIA *Amazonas*: Leticia, 16 June 1965, ♀ (P. R. Craig, J. Robb, DU). ECUADOR *Napo*: Cuyabeno, Lago Agrio Airport, 10 Aug. 1988 (W. Maddison, MCZ). PERU *Huánuco*: Tingo María, Dec. 1946, ♀ (W. Weyrauch, AMNH). *Cusco*: Quillabamba, 7 July 1987, ♀ (MHNSM). BRAZIL *Pará*: Boa Vista, 18 Sept 1964, ♀ (J. Olazarri, CAS). PARA-

GUAY *Cordillera*: Instit. Agric. Nac. Caucupé, 28 Mar. 1981, ♀ (R. D. Cave, IBNP).

*Araneus taperae* (Mello-Leitão)

new combination

Figures 105–108; Map 2

*Metepeira taperae* Mello-Leitão, 1937: 7, fig. 9, ♀.

Female holotype from Tapera, Pernambuco, Brazil, in MNRJ, examined. Roewer, 1942: 868.

*Metepeira taperana*:—Bonnet, 1957: 2823. An invalid name change.

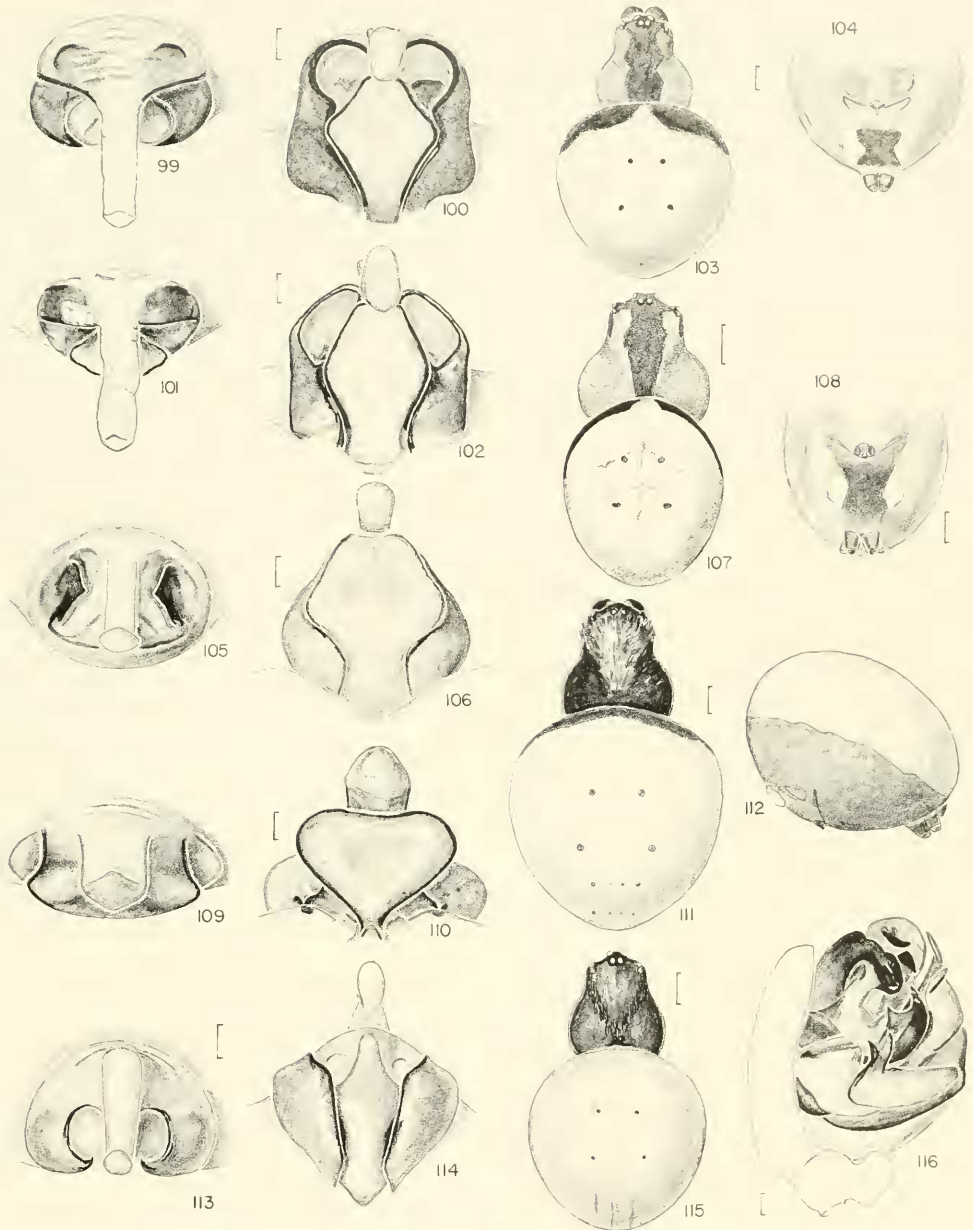
*Description.* Female from Surinam. Carapace orange, head darker orange-brown. Chelicerae brown. Labium, endites light orange. Sternum orange underlain by white pigment in center. Coxae orange; legs indistinctly ringed orange-brown on orange. Dorsum of abdomen white with transverse bars posteriorly on sides (Fig. 107); venter with paired white patches, black between, spinnerets orange-brown (Fig. 108). Posterior median eyes 0.8 diameter of anterior medians, anterior laterals 0.7 diameter, posterior laterals 0.6. Anterior median eyes 1 diameter apart, 1.6 from laterals. Posterior median eyes 0.5 diameter apart, slightly more than 3 from laterals. Abdomen with humps, almost shield-shaped (Fig. 107). Total length 10.5 mm. Carapace 4.9 mm long, 4.2 wide. First femur 5.4 mm, patella and tibia 6.6, metatarsus 4.9, tarsus 1.9. Second patella and tibia 6.0 mm, third 3.7, fourth 5.5.

*Variation.* Total length of females 10.1 to 12.3 mm. The holotype has a spherical abdomen and dorsal marks as in *A. horizonte* (Fig. 103). The abdomen of the specimen from Manaus is dark.

*Diagnosis.* This species differs from the similar *A. horizonte* (Figs. 100, 102) by having a wider posterior median plate of the epigynum; the depressions on each side, visible in ventral view (Fig. 105), are hidden in posterior view (Fig. 106).

*Distribution.* From Surinam to Amazonian Ecuador (Map 2).

*Records.* SURINAM ♀ (C. J. Herring, USNM); Jagtlust, June 1938, ♀ (Geiskes, AMNH). ECUADOR *Napo*: Río Tarapuy, 18 Nov. 1982, ♀ (L. Avilés, MECN). BRAZIL *Amazonas*: Manaus, Tarumã Mirim,



Figures 99–104. *Araneus horizonte* n. sp., female. 99, 101. Epigynum, ventral. 100, 102. Epigynum, posterior. 103. Dorsal. 104. Abdomen, ventral. 99, 100, 103, 104 (Minas Gerais, Brazil). 101, 102 (Peru).

Figures 105–108. *A. taperae* (Mello-Leitão), female. 105. Epigynum, ventral. 106. Epigynum, posterior. 107. Dorsal. 108. Abdomen, ventral.

Figures 109–112. *A. sernai* n. sp., female. 109. Epigynum, ventral. 110. Epigynum, posterior. 111. Dorsal. 112. Abdomen, lateral.

Figures 113–115. *A. bandelierii* Simon, female. 113. Epigynum, ventral. 114. Epigynum, posterior. 115. Dorsal.

Figure 116. *A. xavantina* n. sp., male, left palpus.

Scale lines. 1.0 mm, genitalia 0.1 mm.

flooded forest, 13 May 1983, ♀ (J. Adis, M. Höfer, INPA). *Pará*: Tucuriú, Jan. 1979, ♀ (L. C. F. Alvarenga, MNRJ). *Pernambuco*: Tapera, ♀ (B. Pickel, MNRJ).

*Araneus sernai* new species

Figures 109–112; Map 2

*Holotype*. Female holotype, two female paratypes and one immature from San Pedro, Dpto. Antioquia, Colombia, 12 July 1986 (M. A. Serna), in MCZ. The species is named after the collector.

*Description*. Female. Carapace dark brown with white setae. Chelicerae, labium, endites, sternum, coxae, legs dark brown. Dorsum of abdomen orange-white, venter black (Figs. 111, 112). Secondary eyes 0.6 diameter of anterior medians. Anterior median eyes 1 diameter apart, 1.8 from laterals. Posterior median eyes 0.8 diameter apart, 4.5 from laterals. Abdomen spherical. Total length 12.0 mm. Carapace 5.2 mm long, 4.1 wide. First femur 3.9 mm, patella and tibia 4.8, metatarsus 3.1, tarsus 1.3. Second patella and tibia 4.2 mm, third 2.7, fourth 4.0.

*Variation*. Total length 11.0 to 12.0 mm.

*Diagnosis*. The female is distinguished by the very short scape sitting on a ventral projection formed by the bulging posterior median plate of the epigynum (Figs. 109, 110).

*Natural History*. Specimens were collected in an orange orchard in *Tibouchina* shrubs (Melastomataceae), 3 km from San Pedro at an altitude of 2500 m.

*Paratype*. COLOMBIA *Boyacá*: Río Upía, 850–950 m, Nov., Dec. 1945, ♀ (AMNH).

*Araneus bandelieri* (Simon)

Figures 113–115; Map 2

*Epeira bandelieri* Simon, 1891: 10. Female holotype from Tovar [Mérida], Venezuela, in MNIN, examined

*Aranea bandelieri*:—Roewer, 1942: 837.

*Araneus bandelieri*:—Bonnet, 1955: 441.

*Description*. Female from Caracas. Carapace dark brown with white setae. Chelicerae, labium, endites dark brown. Sternum dark brown, lighter in a median

longitudinal line. Coxae, legs dark brown. Dorsum of abdomen whitish (Fig. 115); venter with transverse dusky patch behind genital groove, followed by an equal-sized white area. Posterior median and lateral eyes 0.8 diameter of anterior medians. Anterior median eyes 1.3 diameters apart, 2 from laterals. Posterior median eyes 0.8 their diameter apart, 3.3 from laterals. Abdomen spherical (Fig. 115). Total length 9.0 mm. Carapace 4.2 mm long, 3.5 wide. First femur 4.2 mm, patella and tibia 4.4, metatarsus 3.8, tarsus 1.4. Second patella and tibia 4.3 mm, third 2.7, fourth 3.9.

*Variation*. Total length of females 8.7 to 11.0 mm. The holotype specimen has the epigynum lightly sclerotized, the scape has parallel sides, and the two depressions are slightly smaller in size than those of the illustrated specimen from Caracas.

*Diagnosis*. Unlike other Neotropical *Araneus* species, *A. bandelieri* has the scape flanked by a pair of oval bordered depressions (Fig. 113); in posterior view the paired depressions flank a median ventral extension of the median plate (Fig. 114).

*Natural History*. According to Simon (1891), this species is social and many females place their egg-sacs in one large common silken sac. None of the recent collections records the species as being social.

*Distribution*. Venezuela, Brazil (Map 2).

*Records*. VENEZUELA *Distrito Federal*: San José del Avila, Caracas, 1940, ♀ (P. C. Vogl, AMNH); Caracas, Feb. 1927, ♀ (M. Pittier, USNM). BRAZIL *Minas Gerais*: Minas Serinha, Diamantina, Jan.–Mar. 1945, 2♀ (E. Cohn, AMNH). *São Paulo*: São Paulo, June 1967, ♀ (L. T. Filho, MZSP 6573). *Paraná*: Curitiba, ♀ (F. Lange, MNRJ). *Rio Grande do Sul*: Canela, 11 Jan. 1966, ♀ (A. A. Lise, MCN 0693).

*Araneus xavantina* new species

Figure 116; Map 2

*Holotype*. Male holotype from 260 km N of Xavantina, Est. Mato Grosso, 12°49'S, 51°46'W, 400 m el., Brazil, Feb.–Apr. 1969, in cerrado scrub (Xavantina–Cachimbo Exped.), MZSP, ex MCZ. The



specific name is a noun in apposition after the type locality.

**Description.** Male. Carapace dark orange to brown in eye region. Chelicerae brown. Labium, endites orange. Sternum orange with dark margin. Coxae orange-gray; legs dark orange (mostly broken off). Dorsum of abdomen with a black band around anterior, widened toward dorsum on each side and in middle, white behind; indistinct pairs of black bars on gray posteriorly; venter with white transverse pigment behind genital groove; a black transverse rectangle behind, surrounded by white pigment spots. Posterior median eyes same diameter as anterior medians, anterior laterals 0.8 diameter, posterior laterals 0.7. Anterior median eyes slightly less than their diameter apart, 0.8 from laterals. Posterior median eyes 0.5 diameter apart, 2 from laterals. Endite with tooth. First coxa with hook. Abdomen oval, pointed behind. Total length 5.8 mm. Carapace 2.8 mm long, 2.5 wide. First femur 3.7 mm. Fourth patella and tibia 2.8 mm.

**Diagnosis.** This species is distinguished from others by the bulky round embolus, whose lateral edge touches the conductor (Fig. 116), and by the long median apophysis.

***Araneus pico* new species**  
Figures 117–121; Map 2

**Holotype.** Female holotype from Pico da Tijuca, 500–950 m, Est. Rio de Janeiro, Brazil, 17 Apr. 1965 (H. Levi), in MZSP, ex MCZ. The specific name is a noun in apposition after the geographical feature.

**Description.** Female. Carapace dark orange-brown with white setae. Chelicerae dark brown. Labium, endites light with dark brown. Sternum light orange with sides brown. Coxae light orange; legs light orange, ringed orange-brown. Dorsum of abdomen with black and white pattern (Fig. 119); venter with median black square on gray (Fig. 120). Posterior median eyes 0.9 diameter of anterior medians, anterior laterals 0.8 diameter, posterior laterals 0.7. Anterior median eyes slightly less than 1 diameter apart, 1.5 from laterals. Posterior

median eyes 0.5 diameter apart, 2.2 from laterals. Abdomen oval, longer than wide (Fig. 119). Total length 8.5 mm. Carapace 3.6 mm long, 3.1 wide. First femur 4.5 mm, patella and tibia 5.5, metatarsus 4.4, tarsus 1.2. Second patella and tibia 4.7 mm, third 2.9, fourth 4.0.

**Male.** Coloration as in female. Posterior median eyes 0.7 diameter of anterior medians, anterior laterals 0.7 diameter, posterior laterals 0.6. Anterior median eyes slightly less than 1 diameter apart, 1 from laterals. Posterior median eyes 0.5 diameter apart, 2.3 from laterals. Endite without tooth. First coxa with hook. Second tibia slightly thicker than first. Abdomen oval. Total length 7.0 mm. Carapace 3.5 mm long, 2.9 wide. First femur 5.8 mm, patella and tibia 7.1, metatarsus 6.2, tarsus 1.5. Second patella and tibia 5.6 mm, third 2.8, fourth 4.0.

**Variation.** Total length of females 8.5 to 10.3 mm.

**Diagnosis.** Females differ from others by the short scape (Fig. 117) and large heart-shaped posterior median plate of the epigynum; also, the epigynum is smooth (Fig. 118), unlike the epigyna of *A. carchi* (Fig. 123) and *A. penai* (Fig. 129). Males have a large curved terminal apophysis in the palpus (Fig. 121), and the median apophysis is higher than long (Fig. 121).

**Paratypes.** BRAZIL *Rio de Janeiro:* Teresópolis, 900–1000 m, Mar. 1946, 2♀ (H. Sick, AMNH); Rio de Janeiro, 200–400 m, Jan., Feb. 1948, ♀ (H. Sick, AMNH). *Paraná:* Cavinna [?], 1947, ♀ (A. Maller, AMNH).

***Araneus carchi* new species**  
Figures 122–127; Map 2

**Holotype.** Female holotype with male paratype from Troya, 2900–2950 m, Carchi Prov., Ecuador, 13 June 1965 (L. Peña), in MCZ. The specific name is a noun in apposition after the type locality.

**Description.** Female holotype. Carapace dark orange, sides of head and thorax darker. The posterior median eyes have oval black rings which almost meet. Labium brown; endites orange. Sternum dark

brown. Coxae and legs orange. Dorsum of abdomen with two pairs of white patches framed by black (Fig. 124); venter dark orange-gray with two longitudinal white lines (Fig. 125). Eyes subequal. Anterior medians 1.3 their diameter apart, 1.3 from laterals. Posterior medians their diameter apart, 2.5 from laterals. Abdomen oval. Total length 5.0 mm. Carapace 2.5 mm long, 2.0 wide. First femur 2.1 mm, patella and tibia 2.5, metatarsus 1.6, tarsus 0.8. Second patella and tibia 2.1 mm, third 1.5, fourth 2.0.

Male. Color as in female, but without dorsal white patches on abdomen. Dorsum of abdomen lighter on sides than in middle. Thoracic depression an indistinct line. Eyes subequal. Anterior median eyes 1.7 their diameter apart, 1.5 from lateral. Posterior medians a little less than their diameter apart, 2.5 from laterals. Endite with tooth. First coxa with hook. Second tibia thicker than first, with macrosetae. Abdomen wider than long. Total length 4.4 mm. Carapace 2.5 mm long, 2.1 wide. First femur 2.5 mm, patella and tibia 3.0, metatarsus 1.8, tarsus 0.9. Second patella and tibia 2.1 mm; third 1.5, fourth 1.9.

*Variation.* Total length of females 5.0 to 5.7 mm, of males 4.0 to 4.7. The four white patches on the abdomen of the holotype are not present in all specimens.

*Diagnosis.* The female differs from that of *A. penai* (Fig. 128) by having a longer scape (Fig. 122) and a narrower posterior median plate of the epigynum (Fig. 123). The male differs from that of *A. penai* (Fig. 121) by having a U-shaped median

apophysis (Fig. 126) and a differently shaped embolus lamella (Fig. 127).

*Distribution.* Ecuadorian Andes, 2600–3300 m (Map 2).

*Paratypes.* ECUADOR *Carchi:* Troya, 2900 m, 10–13 June 1965, ♀ (L. Peña, MCZ). *Imbabura:* Cuicocha, 27 May 1939, ♀ (F. M. Brown, AMNH). *Pichincha:* 3 km S Chillogallo, 3300 m, 17 Jan. 1974, ♀, ♂ (R. M. King, CAS); Quito, 21 Dec. 1958, ♂ (A. M. Nadler, AMNH); Panecillo nr. Quito, 25 Mar. 1880, ♂ (BMNH). *Tungurahua:* Tungurahua, 2600 m, 6 May 1939, 2♀, 2♂ (W. M. Clarke Macintyre, AMNH). *Bolívar:* Hda. Talahua, 3100 m, 29 Apr. 1939, ♂ (F. M. Brown, AMNH).

### *Araneus penai* new species

Figures 128–132; Map 2

*Holotype.* Female holotype and two male paratypes from km 52, S of Cuenca, 3200 m, Azuay, Ecuador, 21 Mar. 1965 (L. Peña), in MCZ. The species is named after the collector.

*Description.* Female holotype. Carapace orange with dusky marks on sides. Chelicerae orange. Labium, endites brown. Sternum dark brown. Coxae light orange. Legs orange with indistinct darker rings. Dorsum of abdomen with three light bands, darker and mottled between two outer bands (Fig. 130); venter dark between epigynum and spinnerets, a light band on each side. Eyes subequal. Anterior median eyes 1.4 diameters apart, 1.5 from laterals. Posterior median eyes 0.8 their diameter apart, slightly more than 2 from laterals. Abdomen oval, widest in middle (Fig. 130).

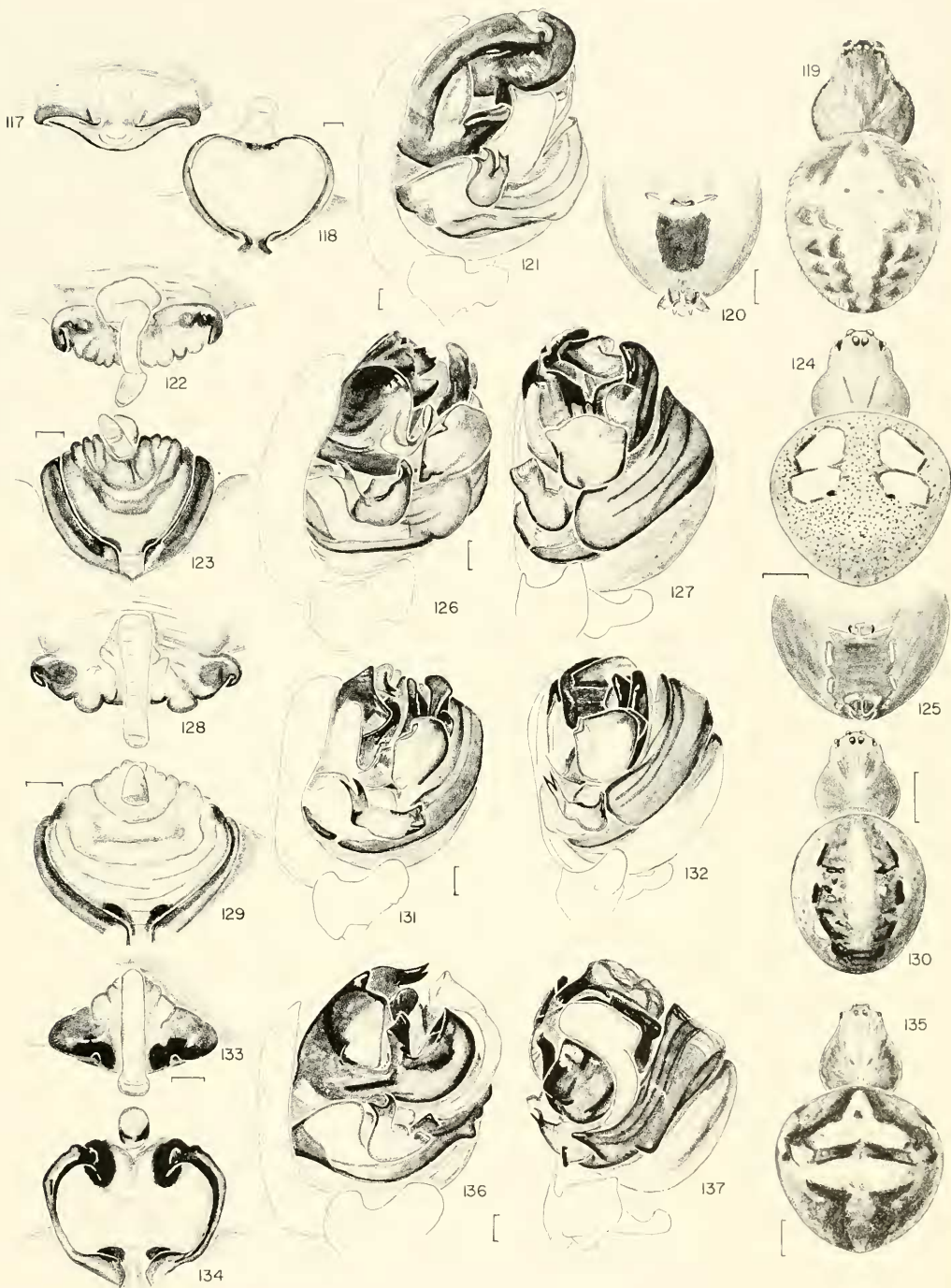
Figures 117–121. *Araneus pisco* n. sp. 117–120. Female. 117. Epigynum, ventral. 118. Epigynum, posterior. 119. Dorsal. 120. Abdomen, ventral. 121. Male, left palpus.

Figures 122–127. *A. carchi* n. sp. 122–125. Female. 122. Epigynum, ventral. 123. Epigynum, posterior. 124. Dorsal. 125. Abdomen, ventral. 126. Male palpus, mesal. 127. Palpus, ventral.

Figures 128–132. *A. penai* n. sp. 128–130. Female. 128. Epigynum, ventral. 129. Epigynum, posterior. 130. Dorsal. 131. Male palpus, mesal. 132. Palpus, ventral.

Figures 133–137. *A. urubamba* n. sp. 133–135. Female. 133. Epigynum, ventral. 134. Epigynum, posterior. 135. Dorsal. 136. Male palpus, mesal. 137. Palpus, ventral.

*Scale lines.* 1.0 mm, genitalia 0.1 mm.



Total length 4.7 mm. Carapace 2.1 mm long, 1.7 wide. First femur 1.8 mm, patella and tibia 2.3, metatarsus 1.3, tarsus 0.7. Second patella and tibia 1.9 mm, third 1.3, fourth 1.7.

Male. Coloration as in female except carapace all orange and abdomen less spotted. Thoracic depression with line. Eyes subequal. Anterior median eyes 1.2 diameters apart, 1.2 from laterals. Posterior median eyes slightly less than their diameter apart, 2 from laterals. Endite with large pointed tooth. First coxa with hook. Second tibia thicker than first, with short macrosetae. Abdomen oval. Total length 4.6 mm. Carapace 2.2 mm long, 1.9 wide. First femur 2.2 mm, patella and tibia 2.7, metatarsus 1.6, tarsus 0.7. Second patella and tibia 2.0 mm, third 1.3, fourth 1.7.

*Note.* The abdomen of the female holotype is damaged at its anterior end and the specimen has a regenerated left second leg.

*Variation.* A second female has a wider abdomen than the holotype.

*Diagnosis.* Females have a shorter scape (Fig. 128) than *A. carchi* (Fig. 122) and a wider posterior median plate in the epigynum (Fig. 129). Males have the median apophysis only slightly curved (Fig. 131) and the embolar lamella of a different shape (Fig. 132).

*Distribution.* Ecuador, at high elevations (Map 2).

*Record.* ECUADOR *Pichincha*: Hacienda Guachalá nr. Cayambe, ♀ (BMNH). *Azuay*: Lagunas de Cajas Bosque Migui, 2°50'S, 79°15'W, 20 Aug. 1988, ♀ (W. Maddison, MECN).

### *Araneus urubamba* new species

Plate 1; Figures 133–137; Map 2

*Holotype.* Male holotype and three female paratypes from Urubamba, 2800 m, arid shrubs, stones, Dpto. Cusco, Peru, 18 Feb. 1965 (H. Levi), in MCZ. The specific name is a noun in apposition after the type locality.

*Description.* Female. Carapace, head orange, sides of thorax dusky brown with white down. Chelicerae, labium, endites

brown. Sternum brown with median longitudinal white marks. Coxae orange; legs orange with indistinct narrow dusky rings. Dorsum of abdomen with two pairs of light patches and a transverse dark band between first and second pair (Fig. 135); venter with a dusky brown band between epigynum and spinnerets. Posterior median eyes same diameter as anterior medians, laterals 0.8 diameter. Anterior median eyes 1.8 diameters apart, 2.5 from laterals. Posterior median eyes 1.2 their diameter apart, 3.7 from laterals. Abdomen subspherical, widest anteriorly. Total length 6.5 mm. Carapace 2.7 mm long, 2.0 wide. First femur 2.8 mm, patella and tibia 3.4, metatarsus 2.2, tarsus 0.8. Second patella and tibia 2.7 mm, third 1.6, fourth 2.3.

Male. Coloration as in female except abdomen with white cardiac mark and mottling on dorsum. Posterior median eyes same diameter as anterior medians, laterals 0.8 diameter. Anterior median eyes 1.5 their diameter apart, 1.5 from laterals. Posterior median eyes 1.2 their diameter apart, 2.5 from laterals. Endite with tooth. First coxa with hook. Second tibia thicker than first, with macrosetae. Abdomen oval. Total length 4.9 mm. Carapace 2.5 mm long, 2.2 wide. First femur 3.6 mm, patella and tibia 4.5, metatarsus 3.1, tarsus 1.1. Second patella and tibia 2.9 mm, third 1.7, fourth 2.5.

*Variation.* The photograph of a living female (Plate 1) shows the female to be shades of brown. Total length of females 6.2 to 6.8 mm, of males 4.2 to 4.9. In females, the dorsal pattern of the abdomen is variable.

*Diagnosis.* The female of *A. urubamba* differs from both *A. penai* (Fig. 128) and *A. carchi* (Fig. 122) in having the posterior edge of the base of the epigynum sclerotized (Fig. 133). In posterior view, the median plate has transverse wrinkles, as in *A. penai* (Fig. 129) and *A. carchi* (Fig. 123), but in *A. urubamba* the median plate is bordered ventrally by lateral plates (Fig. 134). The scape is narrower than that of

*A. acolla* (Fig. 138) and the base lacks the lobed appearance (Fig. 133) of *A. acolla* (Fig. 138). The male has a very distinct, large, sclerotized embolus and a stalked conductor (Figs. 136, 137).

*Natural History.* The female from the Tarma valley was collected at a rock outcrop.

*Distribution.* Peruvian mountains (Map 2).

*Paratypes.* PERU *Junín*: Cochabajo, Tarma Valley, 3600 m, 27 Mar. 1988, ♀ (J. Palmer, D. Smith, MCZ). *Cusco*: Cusco, 3600 m, 25 Feb. 1947, ♀, 2♂ (J. C. Pallister, AMNH); Hacienda Ocapana Ocongate, 3350 m, 6–11 Apr. 1947, 3♀, 2♂ (J. C. Pallister, AMNH).

#### *Araneus acolla* new species Figures 138–141; Map 2

*Holotype.* Female holotype from Acolla, Dpto. Junín, 3460 m, Peru, 13 Sept. 1955 (F. Blancas), in MHNSM. The specific name is a noun in apposition after the type locality.

*Description.* Female. Carapace dark orange-brown with white down; sides of thorax black. Chelicerae dark orange. Labium, endites dark brown. Sternum dark brown. Coxae light brown; legs dark orange. Dorsum of abdomen brown and white with paired black patches (Fig. 140); venter with dark brown band between epigynum and spinnerets (Fig. 141). Posterior median eyes same diameter as anterior medians, anterior laterals 0.9 diameter, posterior laterals 0.8. Anterior median eyes 1.2 diameters apart, 2 from laterals. Posterior median eyes slightly more than their diameter apart, 2.8 from laterals. Abdomen oval, longer than wide (that of type specimen shrivelled). Total length 7.0 mm. Carapace 3.4 mm long, 2.7 wide. First femur 3.1 mm, patella and tibia 3.8, metatarsus 2.6, tarsus 1.1. Second patella and tibia 3.1 mm, third 1.8, fourth 2.8.

*Diagnosis.* *Araneus acolla* differs from *A. urubamba* (Fig. 133, 134) by having a wider scape, a lobed base of the epigynum

in ventral view (Fig. 138), and by having the lateral plates wider in posterior view (Fig. 139).

#### *Araneus moretonae* new species Figures 142–145; Map 2

*Holotype.* Female holotype and two immature paratypes from Machupicchu, between hotel and station, Dpto. Cusco, Peru, 26 Jan. 1973 (A. Moreton), in MCZ. The species is named after Ann Moreton, the collector, who interested many young people in spiders.

*Description.* Female. Carapace red-brown. Chelicerae, labium, endites, sternum dark brown. Coxae orange. Legs orange with brown rings. Dorsum of abdomen with two white patches and symmetrical dark brown markings on lighter brown (Fig. 144); venter brown with a lighter brown longitudinal band on each side and streaked on sides of band (Fig. 145). Posterior median eyes 0.7 diameter of anterior medians, anterior laterals 0.7 diameter, posterior laterals 0.6. Anterior median eyes 1.2 diameters apart, 1.8 from laterals. Posterior median eyes 0.7 their diameter apart, 3.7 from laterals. Abdomen subspherical, dorsoventrally slightly flattened. Total length 9.2 mm. Carapace 4.4 mm long, 3.6 wide. First femur 4.4 mm, patella and tibia 5.4, metatarsus 3.9, tarsus 1.5. Second patella and tibia 4.7 mm, third 2.9, fourth 4.1.

*Variation.* The Cusco paratypes lack the two white patches on the dorsum and also have fewer dark marks on the dorsum of the abdomen, most dark marks being on the sides. In the paratypes from Huacapistana the distance is greater between the lateral plates of the epigynum in posterior view.

*Diagnosis.* *Araneus moretonae* differs from *A. acolla* (Fig. 139) and *A. meropes* (Fig. 159) by having rectangular lateral plates of the epigynum almost parallel in position in posterior view (Fig. 143).

*Paratypes.* PERU *Junín*: Huacapistana, 2500 m, 9♀ (K. Jelski, PAN). *Cusco*: Torontoy Canyon, base of Machupicchu,

2000–2200 m, 19–23 June 1964, ♀ (B. Malkin, AMNH).

*Araneus granadensis* (Keyserling)  
Figures 146–152; Map 3

*Epeira granadensis* Keyserling, 1864: 86, pl. 4, figs. 7–9, ♀, ♂. Male lectotype, female and two immature paralectotypes, here designated from Santa Fé de Bogotá [Bogotá, Colombia], in BMNH, examined; 1892: 194, pl. 9, fig. 144, ♂, ♀.

*Aranea granadensis*:—Roewer, 1942: 841.

*Neoscona granadensis*:—Bonnet, 1958: 3058.

*Note.* A male lectotype is here designated, as the females are shrivelled and poorly preserved, including the epigynum. The female paralectotypes are undoubtedly the same species. In the vial is also a female *Metepeira*. According to Keyserling's illustration, the female was shrivelled when he illustrated it.

*Description.* Female from Bogotá. Carapace dark brown with median orange line, sides and eye region orange. Sternum dark brown with median orange streak. Chelicerae mottled; endites dark brown, coxae orange. Legs orange, distal articles ringed dark brown. Dorsum of abdomen dark with indistinct folium, and median anterior light patch (Fig. 149). Venter black and brown with two light bands (Fig. 150). Carapace hairy. Posterior median eyes same diameter as anterior median eyes, lateral eyes 0.8 diameter. Anterior median eyes a little less than 2 diameters apart, a little more than 4 from laterals. Posterior median eyes their diameter apart, a little more than 4 from laterals. Abdomen spherical and hairy (Fig. 149). Total length 10.7 mm. Carapace 4.9 mm long, 4.1 wide. First femur 5.1 mm, patella and tibia 6.6, metatarsus 4.7, tarsus 1.5. Second patella and tibia 5.4 mm, third 3.2, fourth 4.5.

Male from Bogotá. Carapace streaked brown and orange. Labium and endites

brown; sternum brown with median yellow streak. Coxae orange; legs orange with darker rings at ends of articles. Dorsum of abdomen whitish with minute, sclerotized, brown spot at base of each of the numerous setae, and small, paired, dusky lines. Venter dark brown enclosing two lighter areas, light on sides. Posterior median eyes 0.8 diameter of anterior medians, laterals 0.7 diameter. Anterior median eyes a little more than their diameter apart, 1.7 from laterals. Posterior median eyes a little less than their diameter apart, a little less than 3 from laterals. First coxa with hook. Second tibia only slightly thicker than first with short macrosetae. Total length 8.3 mm. Carapace 4.1 mm long, 3.2 wide. First femur 6.2 mm, patella and tibia 7.9, metatarsus 6.3, tarsus 1.8. Second patella and tibia 5.4 mm, third 3.1, fourth 4.5.

*Variation.* Total length of females 9.7 to 18 mm, of males 8.0 to 8.3.

*Diagnosis.* Females can be confused with *A. bogotensis* but differ by having the posterior median plate of the epigynum longer than wide (Fig. 147), while that of *A. bogotensis* (Fig. 18) is usually square. Females are further distinguished by the ventral sculpturing, a depression in the lateral plates seen in both ventral (Fig. 146) and posterior view at the ventral end (Fig. 147), and a shorter scape with nearly parallel sides (Fig. 146).

Males differ by having a shorter median apophysis (Fig. 151) and a narrow conductor in the palpus (Fig. 152).

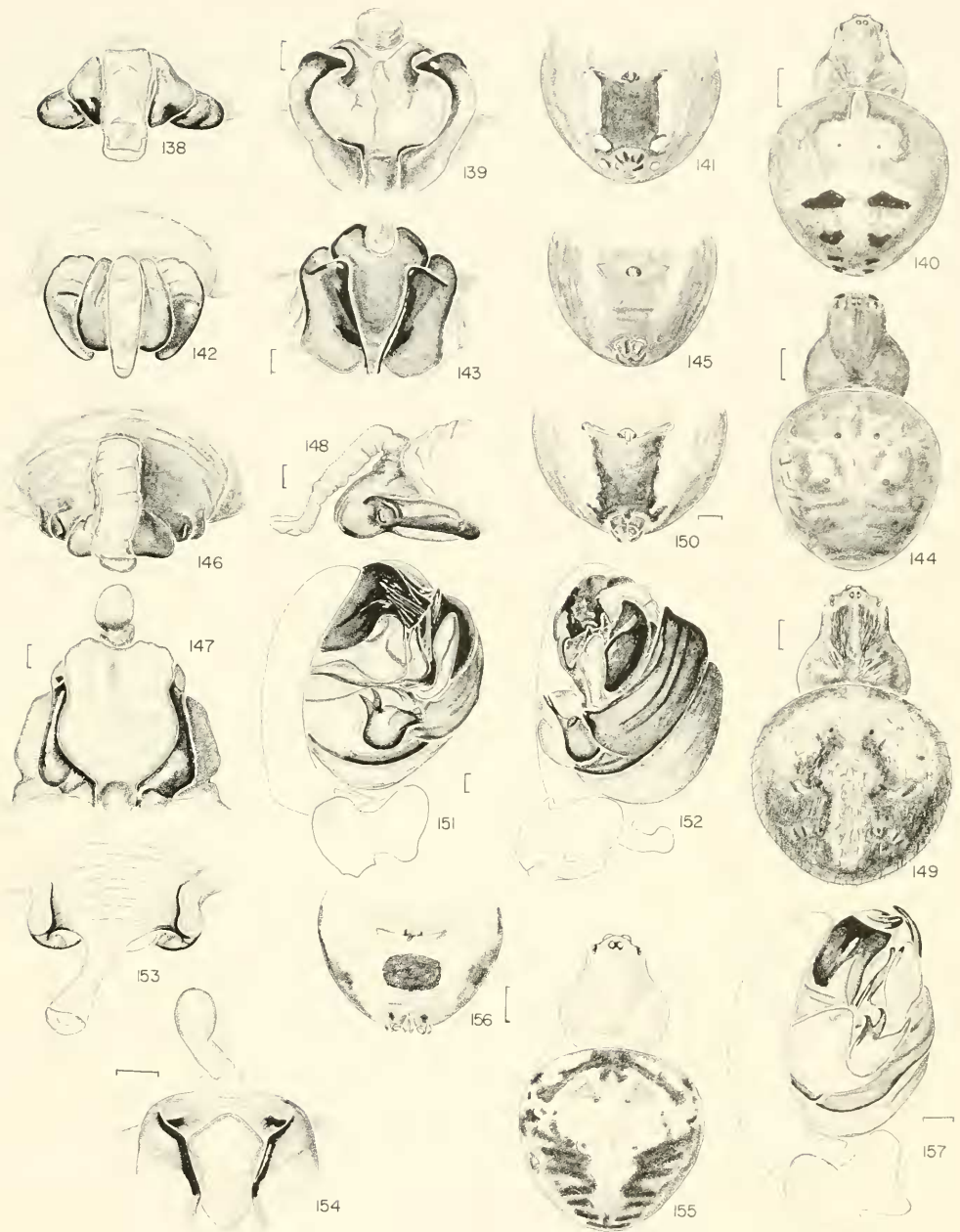
*Natural History.* The species has been collected on buildings, under eaves, in vegetation, and on a cactus in Bogotá, all at high elevations.

*Distribution.* Venezuela to Peru (Map 3).

*Records.* VENEZUELA *Mérida*: La Honda, between Sto. Domingo and Mu-

Figures 138–141. *Araneus acolla* n. sp., female. 138. Epigynum, ventral. 139. Epigynum, posterior. 140. Dorsal. 141. Abdomen, ventral.

Figures 142–145. *A. moretonae* n. sp., female. 142. Epigynum, ventral. 143. Epigynum, posterior. 144. Dorsal. 145. Abdomen, ventral.



Figures 146–152. *A. granadensis* (Keyserling). 146–150. Female. 146. Epigynum, ventral. 147. Epigynum, posterior. 148. Epigynum, lateral. 149. Dorsal. 150. Abdomen, ventral. 151, 152. Male, left palpus. 151. Mesal. 152. Ventral.

Figures 153–156. *A. tambopata* n. sp., female. 153. Epigynum, ventral. 154. Epigynum, posterior. 155. Dorsal. 156. Abdomen, ventral.

Figure 157. *A. jamundi* n. sp., male palpus.

Scale lines 1.0 mm, genitalia 0.1 mm.

cubaji, 2600 m, ♀, ♂ (USNM); 11 km SW Sto. Domingo, ♀ (USNM). COLOMBIA *Magdalena*: Cerra Juaneta, Sierra Nevada de Santa Marta, ♀ (JAK); Río Donachui, 3000 m, ♀ (JAK); Río Donachui, 3700 m, ♀ (MCZ); San Sebastian de Rábago, 2000 m, ♀ (AMNH). *Antioquia*: San Pedro, 2000 m, ♀ (MCZ). *Santander*: Río Suárez, 1000 m, ♀ (AMNH); Río Opón, 1000 m, ♀ (AMNH). *Cundinamarca*: Bogotá, ♀, ♂ (MCZ, DU). *Valle*: 21 km W Cali, ♀ (CAS). *Nariño*: La Cruz, 2450 m, ♀ (MCZ). EC-UADOR *Pichincha*: Quinche, ♀ (MECN); Puembo, ♀ (MECN); Quito, ♀ (ZMK); 11 km S Cayambe, ♀ (CAS); La Mitad del Mundo, San Antonio de Pichincha, ♀ (MCZ); Cuicocha, Imbabura, 3300 m, ♀ (AMNH); nr. Pomasqui, ♀ (MCZ). *Cotopaxi*: on road from Latacunga to Machai, ♀ (BMNH); Machai to Pedregal, ♀ (BMNH). *Tungurahua*: Ambato, ♂ (CAS). *Chimborazo*: road to Riobamba, ♀ (BMNH). *El Oro*: Chilla, ♀ (BMNH). PERU *Arequipa*: Atiquipa (Chala), 300 m, ♀ (CAS).

*Araneus tambopata* new species  
Figures 153–156; Map 3

*Holotype*. Female holotype from Zona Reserva Tambopata, torocha principal: km 3, Madre de Dios, Peru, 21 July 1987 (D. Silva D.), in MHNSM. The specific name is a noun in apposition after the type locality.

*Description*. Female. Carapace orange, wide black rings around posterior median eyes. Chelicerae, labium, endites, sternum orange. Coxae orange; legs orange with a few scattered black spots; third tarsi and distal half of fourth tibiae and metatarsi black. Dorsum of abdomen black and gray with silver spots (Fig. 155). Venter with a black square, spinnerets orange, anterior ones with a black patch laterally (Fig. 156). Eyes large. Posterior median eyes 0.8 diameter of anterior medians, laterals 0.6 diameter. Anterior median eyes 0.7 diameter apart, 1 from laterals. Posterior median eyes 0.4 their diameter apart, 1.8 from laterals. Abdomen subspherical [damaged] (Fig. 155). Total length 8.8 mm. Carapace 4.0 mm long, 3.1 wide. First femur 4.4 mm, patella and tibia 5.1, meta-

tarsus 3.8, tarsus 1.3. Second patella and tibia 4.5 mm, third 2.7, fourth 4.0.

*Note*. This species may not belong to the genus *Araneus*. A male is needed for generic placement.

*Diagnosis*. This species differs from all other Neotropical species by having the scape constricted at the middle, with the distal end wide, and by having a longitudinal groove on each side of the epigynum base (Fig. 153).

*Araneus jamundi* new species  
Figure 157; Map 2

*Holotype*. Male from Río Jamundí, between Cali and Jamundí, 1000 m, Valle, Colombia, 1973 (W. Eberhard), in MCZ. The specific name is a noun in apposition after the type locality.

*Description*. Male. Carapace orange with dusky patch covering eyes and coming to a point in thoracic depression. Chelicerae, labium, endites, sternum, coxae, and legs light orange. Abdomen white; venter with row of white pigment spots behind genital groove, and another in front of spinnerets. Thoracic depression a cross with lateral branches pointing posteriorly. Posterior median eyes 0.9 diameter of anterior medians, laterals 0.7 diameter. Anterior median eyes slightly more than their diameter apart, the same from laterals. Posterior median eyes 0.4 their diameter apart, 2 from laterals. Endite with tooth. First coxa with hook. Second tibia thicker than first. Abdomen oval, pointed behind. Total length 5.2 mm. Carapace 2.7 mm long, 2.1 wide. First femur 4.2 mm, patella and tibia 5.0, metatarsus 3.9, tarsus 1.1. Second patella and tibia 3.8 mm; third 1.9, fourth 2.7.

*Diagnosis*. The male of this species is distinguished from other known males by the thin elongate embolus and the pointed lateral end of the median apophysis (Fig. 157).

*Araneus meropes* (Keyserling)  
Figures 158–167; Map 3

*Epeira meropes* Keyserling, 1865: 825, pl. 19, figs 6, 7, ♂. Male holotype from New Granada [Spanish



colony of Colombia and Panama], in BMNH, examined; 1892: 139, pl. 7, fig. 102, ♂.

?*Epeira lechugalensis* Keyserling, 1883, 195, pl. 15, fig. 1, ♀. Female holotype from Lechugal [Puestó Lechugal, Tumbes, 03°37'S, 80°12'W], Peru, in PAN, lost; 1892: 191, pl. 9, fig. 142, ♀. DOUBTFUL NEW SYNONYMY.

*Araneus bourgeoisi* Berland, 1913: 93, pl. 9, figs. 44, 45, ♀. Female holotype from Pinllar [Cerro Pinllar], Ecuador, lost (not in MNHN). Bonnet, 1955: 448. NEW SYNONYMY.

*Aranea plesia* Chamberlin, 1916: 253, pl. 19, fig. 5, ♀. Female holotype from Sorontoy, 2300 m [Torontoy, Dpto. Cusco, 13°10'S, 72°30'W], Peru, in MCZ, examined. Roewer, 1942: 850. NEW SYNONYMY.

*Aranea bourgeoisi*:—Roewer, 1942: 838.

*Aranea lechugalensis*:—Roewer, 1942: 846.

*Aranea meropes*:—Roewer, 1942: 846.

*Araneus lechugalensis*:—Bonnet, 1955: 528.

*Aranea meropes*:—Bonnet, 1955: 543.

*Araneus plesius*:—Bonnet, 1955: 567.

*Note.* I previously (Levi, 1973) synonymized the name *meropes* with *thaddeus*; this was an error. Keyserling's illustration of *Epeira lechugalensis* may be this species; perhaps the scape was torn off in his specimen. The proportions of the epigynum illustrated by Berland makes it possible to identify *Araneus bourgeoisi*.

*Description.* Female from Sierra Nevada de Santa Marta, Colombia. Carapace brownish orange, sides of head and thorax brown. Chelicerae brownish orange. Labium, endites brown. Sternum dark brown. Coxae orange; legs dark brown, except proximal parts of third and fourth femora orange. Dorsum of abdomen with light folium marks on dark brown (Fig. 164); venter with a median dark band, a light brown band on each side, and sides dark (Fig. 165). Posterior median eyes same diameter as anterior medians, laterals 0.9 diameter. Anterior median eyes 1 diameter apart, 1.7 from laterals. Posterior median eyes slightly less than their diameter apart, 2.2 from laterals. Abdomen subspherical (Fig. 164). Total length 8.7 mm. Carapace 3.2 mm long, 2.7 wide. First femur 3.4 mm, patella and tibia 4.1, metatarsus 2.9, tarsus 1.0; Second patella and tibia 3.2 mm, third 1.9, fourth 2.9.

Male from Sierra Nevada de Santa Marta, Colombia. Color lighter than in female,

legs ringed, and abdominal light markings dark and indistinct. Posterior median eyes 0.8 diameter of anterior medians, laterals 0.5 diameter. Anterior median eyes 1.2 diameters apart, 1.3 from laterals. Posterior median eyes 1 diameter apart, 3 from laterals. Endite with blunt tooth. First coxa with hook. Second tibia slightly thicker than first. Abdomen oval. Total length 5.5 mm. Carapace 2.8 mm long, 2.3 wide. First femur 4.9 mm, patella and tibia 5.7, metatarsus 4.6, tarsus 1.1. Second patella and tibia 3.8 mm, third 2.1, fourth 2.3.

*Variation.* The measurements above are of specimens from northern Colombia. The measurements of the male type of *Epeira meropes* are total length 4.3 mm; carapace 2.1 mm long, 1.7 wide; first femur 3.4 mm, patella and tibia 4.1, metatarsus 2.9, tarsus 0.9; second patella and tibia 2.8 mm, third 1.4, fourth 2.2. A male from Peru measured total length 5.4 mm; carapace 2.5 mm long, 1.9 wide; first femur 2.4 mm, patella and tibia 3.1, metatarsus 2.1, tarsus 0.8; second patella and tibia 2.5 mm, third 1.4, fourth 2.1. A male from Antioquia, Colombia, measured total length 3.8 mm; carapace 2.1 mm long, 1.6 wide; first femur 2.9 mm, patella and tibia 3.2, metatarsus 2.3, tarsus 0.8; second patella and tibia 2.0 mm, third 1.3, fourth 1.9.

The eye ratios of three males (the holotype of *meropes*; specimen from Antioquia Dept., Colombia; specimen from Magdalena Dept., Colombia) were as follows: posterior medians, 1, 0.8, 0.8 diameter of anterior medians, laterals 1, 0.6, 0.5 diameter. The anterior medians are 1.5, 1, 1.2 diameters apart; 1.5, 1+, 1.3 diameters from laterals. The posterior median eyes are 1, -1, 1 diameter apart; 3, 2, 3 diameters from laterals.

Total length of females 5.7 to 9.5 mm, of males 3.8 to 5.5 mm. The smallest female came from Peru, the largest from Argentina, but differences in size are individual, not regional.

There is considerable variation among specimens and they were first thought to belong to several species. In females there is variation in dorsal-abdominal and car-

apace pattern, in size and relative leg length, and in the shape of the posterior median plate of the epigynum. Males differ in relative size of the palpal tibia (small in central specimens, large in southern ones), and the median apophysis of the palpus differs in length and in the shape of its distal tip.

*Diagnosis.* Females can be separated from *A. koepckeorum* (Fig. 168) by the smaller lateral lobes in ventral view of the epigynum, containing smaller depressions (Figs. 158, 160, 162).

The male can be separated from others by the relatively short lateral tail of the median apophysis (Fig. 166), the stalked bent conductor (Fig. 167), and the laterally curved embolus, which has a soft area toward the median (Fig. 166). The males have shorter legs than the males of the similar *A. koepckeorum*.

*Natural History.* Some specimens in collections came from wasp nests. Others came from spiny clump-forming bromeliads in northern Colombia, all ages side by side. One spider was found in a bromeliad, in the growing tip in small leaves. Several leaves are bound together with strong silk. The web of a large female is above the retreat and connected to surrounding vegetation with a line down to the bromeliad, where the spider often retreats deep inside. Adults are drab, but juveniles exhibit a variety of colors (J. Kochalka, personal communication). Still other specimens came from a bamboo cloud forest, ruins at Machupicchu, and a forest in Argentina; all came from high elevations.

*Distribution.* Northern Colombia to northern Argentina (Map 3).

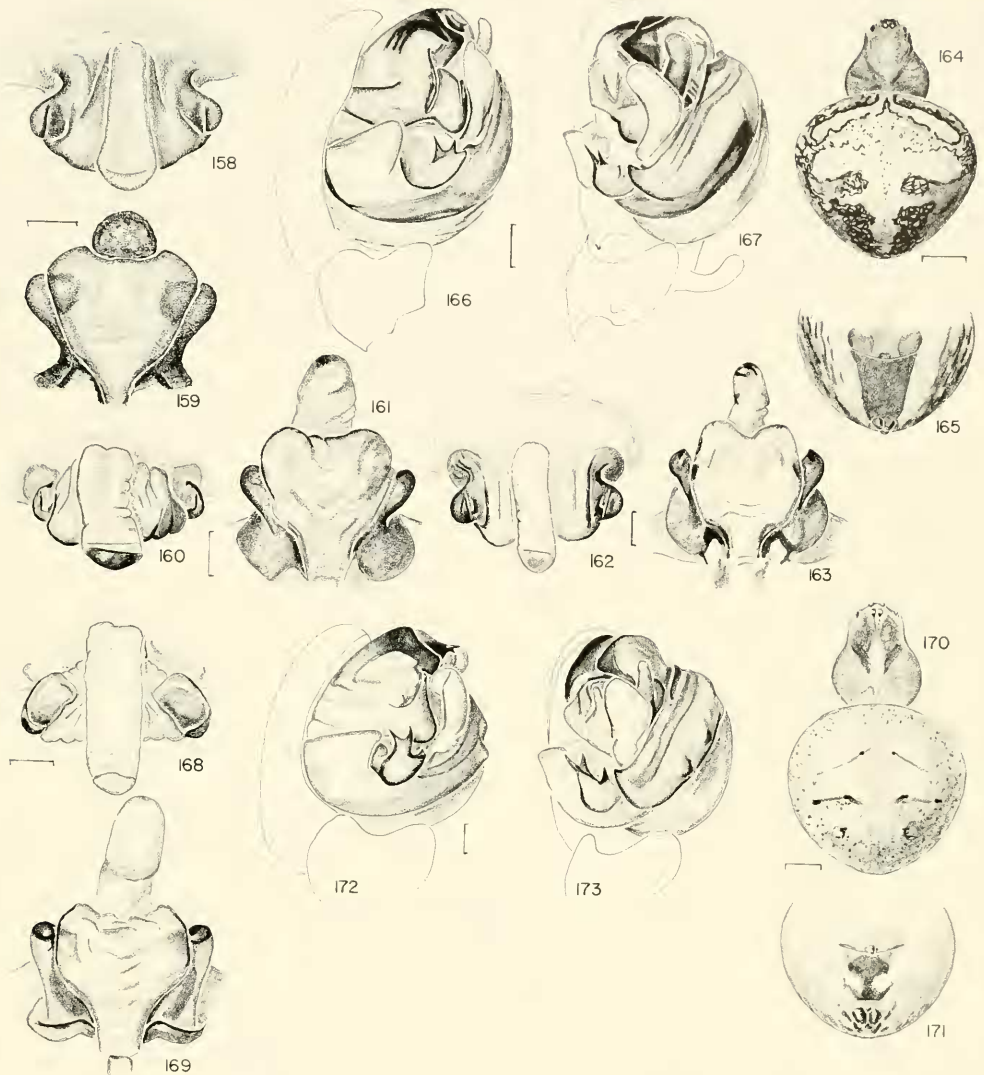
*Records.* COLOMBIA *Magdalena:* Sierra Nevada de Santa Marta: East Cerro Kennedy, 2240 m, ♀, ♂ (MCZ); Cerro Las Palomitas, 2500 m, ♀ (JAK); Casa Antonio, Loma Cebollita, 2700 m, ♀, ♂ (USNM, AMNH, MCZ); Mt. San Lorenzo, Santa Marta, 2250 m, ♀ (MCZ). *Antioquia:* Medellín Valley, 1700–1900 m, ♀, ♂ (MCZ); Peñol, 2100 m, ♀, ♂ (MCZ); Giraldo, 2100

m, ♀ (MCZ); Santa Rosa de Osos, ♀ (MNHMC). *Santander:* Río Suárez, 800–1000 m, ♀ (AMNH). *Valle:* 10 km W Cali, ♀ (MCZ); above Fidelia, 2000 m, ♀ (MCZ). *Nariño:* La Cruz (CV). *Putumayo:* Sibundoy, 2200 m, ♀ (MCZ). *Caquetá:* Río Ortegua, ♂ (AMNH). ECUADOR *Pichincha:* Tumbaco, ♀ (MECN); nr. Pomasquí, ♀, ♂ (MCZ). *Morona-Santiago:* Sucúa, 1000 m, ♀ (MCZ). *Azuay:* S Cuenca, 2500–2800 m, ♂ (MCZ); Cuenca, ♀, ♂ (MECN); Cuenca, ♀ (MCZ, CAS); 30 km NE Cuenca, ♀ (CAS). PERU *Piura:* Huará, 3000 m, ♀ (CAS); *Cajamarca:* Llama, 2200 m, ♀ (CAS); Montana de Nancho, 2400 m, ♀ (PAN). *Lima:* Río Rímac at Matucana, 2400 m, ♀ (CAS); Matucana, ♀ (CU); Canta, 2800 m, ♀ (CAS). *Junín:* vicinity of Viena, 2600 m, ♂ (BMNH); Pumamarca, ♀ (PAN); Amable María, ♀ (PAN). *Cusco:* Urubamba, 2800 m, ♀, ♂ (MCZ); Machupicchu, 2400 m, ♀ (MCZ, AMNH). *Puno:* Limbani, Carabaya, 2900 m, ♀, ♂ (BMNH); Angualani, nr. Limbani, ♀ (BMNH). ARGENTINA *Salta:* Rd. 33 from Chicoana to Cachi, ca. 12 km W El Caril, 18 Mar. 1988, 3♀ (F. Coyle, R. Bennett, P. A. Goloboff, MCZ).

*Araneus koepckeorum* new species  
Figures 168–173; Map 3

*Holotype.* Female from Miraflores, Lima, Peru, 6 Feb. 1965, in house and garden (H. Levi), in MCZ. This species is named after H. W. and M. Koepcke, former hosts of the Humboldt house in Miraflores and proponents of Peruvian biological studies.

*Description.* Female. Carapace orange, sides of head brown, sides of thorax dark orange. Chelicerae dark orange. Labium, endites brown with lighter margin. Sternum dark brown with a median, light, longitudinal band enclosing some white pigment. Coxae light orange. Legs light orange with narrow brown rings. Dorsum of abdomen light brown, with black dots and paired dark transverse lines (Fig. 170). Venter light, with a black band between epigynum and spinnerets enclosing pairs of light patches (Fig. 171); spinnerets dark brown. Posterior median eyes same diameter as anterior medians, anterior lat-



Figures 158–167. *Araneus meropes* (Keyserling). 158–165. Female. 158, 160, 162. Epigynum, ventral. 159, 161, 163. Epigynum, posterior. 158, 159 (Torontoy, Dpto. Cusco, Peru). 160, 161 (Dpto. Magdalena, Colombia). 162, 163 (Machupicchu, Cusco, Peru). 164. Dorsal. 165. Abdomen, ventral. 166, 167. Male, left palpus. 166. Mesal. 167. Ventral.

Figures 168–173. *A. koepckeorum* n. sp. 168–171. Female. 168. Epigynum, ventral. 169. Epigynum, posterior. 170. Dorsal. 171. Abdomen, ventral. 172. Male palpus, mesal. 173. Ventral.

Scale lines. 1.0 mm, genitalia 0.1 mm.

erals 0.7 diameter, posterior laterals 0.8. Anterior median eyes 1.2 diameters apart, 2 from laterals. Posterior median eyes first diameter apart, slightly more than 3 from

laterals. Abdomen subspherical, widest anteriorly (Fig. 170). Total length 7.5 mm. Carapace 3.2 mm long, 2.6 wide. First femur 4.2 mm, patella and tibia 4.7, meta-

tarsus 3.4, tarsus 1.2. Second patella and tibia 3.7 mm, third 2.1, fourth 3.3.

Male. Coloration as in female. Chelicerae distally swollen. Posterior median eyes 0.8 diameter of anterior medians, laterals 0.7 diameter. Anterior median eyes 1.2 diameters apart, 1.6 from laterals. Posterior median eyes their diameter apart, almost 3 from laterals. Endite with tooth. Coxal hook forming a blunt spine. Femoral groove very small. Second tibia thinner than first, not modified. Abdomen oval, widest anteriorly. Total length 5.4 mm. Carapace 2.7 mm long, 2.3 wide. First femur 5.3 mm, patella and tibia 6.1, metatarsus 5.2, tarsus 1.4. Second patella and tibia 4.3 mm, third 2.2, fourth 3.4.

*Variation.* Total length of females 4.7 to 8.4 mm, of males 4.7 to 5.5.

*Diagnosis.* The female can be distinguished from that of *A. meropes* (Figs. 158, 159) by the larger lateral lobes in ventral view of the epigynum (Fig. 168). The male palpus is similar to that of *A. meropes* (Figs. 166, 167), but the shape of the conductor is more rounded (Figs. 172, 173). The legs of the male are much longer than those of *A. meropes*: in *A. koepckeorum* males, the length of the first femur is equal to the total length of the spider and the first patella and tibia are 2.2 times the length of the carapace, while in *A. meropes* the length of the first femur is 1.3 times that of the carapace, and the first patella

and tibia are 1.5 times the length of the carapace.

*Natural History.* The species has been collected from a garden and from a cotton field near Lima.

*Distribution.* Mostly from lower elevations, Peru (Map 3).

*Paratypes.* PERU *Cajamarca*: Montaña di Nancho, 2400 m, ♀ (K. Jelski, J. Sztolcman, PAN). *Lima*: Canta, 6 Apr. 1985, ♂ (V. Pacheco, MHNSM); Lima, 9♀ (K. Jelski, J. Sztolcman, PAN); Quebrada Verde, Nov. 1948, 8♀, ♂ (W. Weyrauch, CAS); Canta, Río Chillón, 2800 m, 12 May 1951, 5♀ (W. Weyrauch, CAS). *Cusco*: Urubamba, Nov. 1986, ♀ (E. Yabar, MHNSM). *Arequipa*: Mollendo, Loma Zone, 19 Nov. 1950, 4♀, ♂ (E. S. Ross, A. E. Michelbacher, CAS); Atiquipa (Chala) 500 m, 11 Dec. 1951, ♀ (W. Weyrauch, AMNH); Arequipa, 4 Apr. 1953, 2♀ (I. Brownlee, CAS); Capac (Chala), 200 m, 9 Dec. 1951, ♀ (W. Weyrauch, AMNH); Atiquipa (Chala) 200 m, 11 Dec. 1951, ♀, 2♂ (W. Weyrauch, CAS, MCZ).

### *Araneus stabilis* (Keyserling) Figures 174–178; Map 3

*Epeira stabilis* Keyserling, 1892: 213, pl. 10, fig. 158, ♀, ♂. One female lectotype, one male paralectotype here designated from Rio Minas, Est. Espírito Santo, Brazil, in BMNH, examined.

*Aranea stabilis*:—Roewer, 1942: 853.

*Araneus stabilis*:—Bonnet, 1955: 603.

Figures 174–178. *Araneus stabilis* (Keyserling). 174–176. Female. 174. Epigynum, ventral. 175. Epigynum, posterior. 176. Dorsal. 177. Abdomen, ventral. 178. Male, left palpus.

Figures 179–183. *A. fronki* n. sp. 179–182. Female. 179. Epigynum, ventral. 180. Epigynum, posterior. 181. Dorsal. 182. Abdomen, ventral. 183. Male palpus.

Figures 184–187. *A. beebei* n. sp., female. 184. Epigynum, ventral. 185. Epigynum, posterior. 186. Dorsal. 187. Abdomen, ventral.

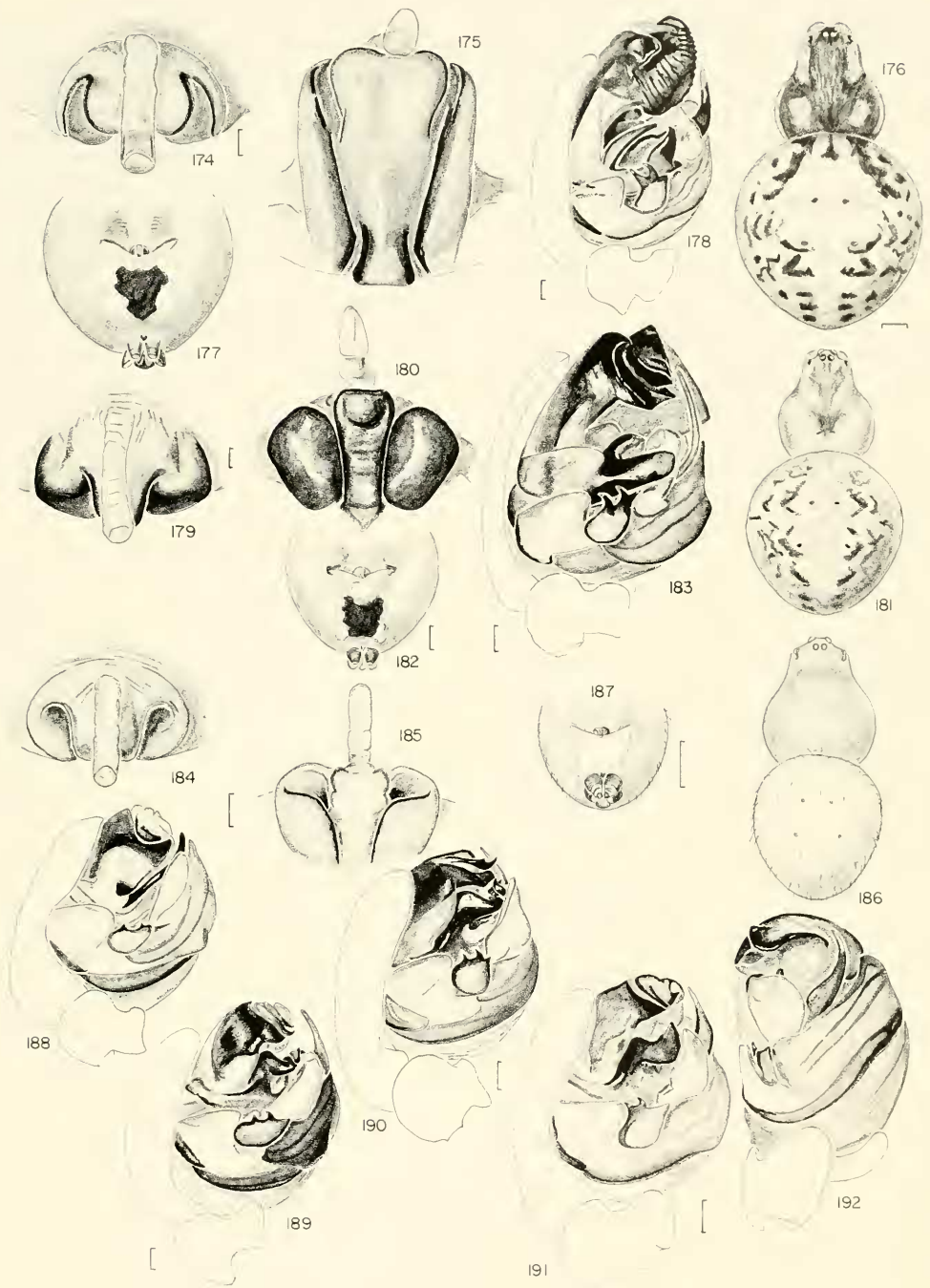
Figure 188. *A. cohae* n. sp., male palpus.

Figure 189. *A. matogrosso* n. sp., male palpus.

Figure 190. *A. carimagua* n. sp., male palpus.

Figures 191, 192. *A. gerais* n. sp., male palpus. 191. Mesal. 192. Ventral.

*Scale lines.* 1.0 mm, genitalia 0.1 mm.



*Description.* Female from Rio de Janeiro. Carapace dark brown, with two pairs of light patches and white setae, rim of thorax light. Labium brown, sternum orange with dark patch on each side. Coxae light orange; legs orange with dark brown rings and patches. Dorsum of abdomen with three dark anterior marks and paired posterior marks (Fig. 176); venter with a triangular black patch (Fig. 177). Posterior median and lateral eyes 0.8 diameter of anterior median eyes. Anterior median eyes their diameter apart, 1.2 from laterals. Posterior median eyes 0.5 diameter apart, 2 from laterals. Abdomen spherical (Fig. 176). Total length 12.5 mm. Carapace 5.3 mm long, 4.6 wide. First femur 6.2 mm, patella and tibia 7.2, metatarsus 5.7, tarsus 1.8. Second patella and tibia 6.6 mm, third 4.0, fourth 5.9.

Male from Curitiba. Lighter than female. Carapace dark orange with symmetrical dusky marks. Chelicerae, labium, endites dark orange. Sternum, orange. Coxae orange; legs orange with dark rings. Dorsum of abdomen with three black marks on anterior margin, a black outline of folium posteriorly. Posterior median and anterior lateral eyes 0.7 diameter of anterior median eyes, posterior laterals 0.6 diameter. Anterior median eyes 0.7 diameter apart, 0.7 from laterals. Posterior medians 0.5 diameter apart, 2 from laterals. Endite with tooth. First coxa with hook. Second tibia thicker than first. Abdomen oval. Total length 5.8 mm. Carapace 3.2 mm long, 2.7 wide. First femur 4.8 mm, patella and tibia 5.9, metatarsus 5.0, tarsus 1.5. Second patella and tibia 4.6 mm, third 2.6, fourth 3.6.

The photograph of a female shows the carapace to be black with white setae and the abdomen with median reddish folium, white patches between it and the black marks, and the abdomen sides to be white and black.

*Note.* Males and females were matched by Keyserling. Females of one collection were collected with males of *A. workmani*; no other females have been collected with males.

*Variation.* Total length of females 7.5 to 12.5 mm, of males 4.8 to 7.7. Most females have the carapace dark with paired light patches, the abdomen relatively light.

*Diagnosis.* The female is easily separated from those of similar species by the epigynum, which has a pointed slit on each side in ventral view (Fig. 174) and a median plate (in posterior view), which is about twice as long as wide (Fig. 175). No other species has the median plate so long.

The male differs from that of *A. fronki* (Fig. 183) by having the spines of the median apophysis different in shape, a differently shaped embolus, and a bulging, striated terminal apophysis (Fig. 178).

*Natural History.* Specimens have been collected from a forest edge in the Rio de Janeiro Botanical Garden.

*Distribution.* From southern Bahia State, Brazil, to Buenos Aires Province, Argentina (Map 3).

*Records.* BRAZIL *Bahia*: Fazenda Matia, Camacan [?], ♀ (MCN). *Espírito Santo*: Espírito Santo, ♂ (BMNH). *Rio de Janeiro*: Rio de Janeiro, Jardim Botânico, 3♀ (MCZ, MNRJ); Parque Nacion. Tijuca, ♀ (MCZ). *São Paulo*: Monte Alegre, Amparo, 8 imm., 2♂ (MZSP); Ilha da São Sebastião, ♀ (MZSP); São Paulo, ♀, ♂ (AMNH, MZSP); Barueri, ♀ (MZSP); Cocaia, Santo Amaro, 2♀ (MZSP); Mauá, 4♀ (MZSP). *Paraná*: Curitiba, ♀ (MNRJ); Iguatemi, ♂ (MCN); Vila Velha, 2♀ (MZSP). *Santa Catarina*: Pinhal, 4♀ (AMNH). *Rio Grande do Sul*: Cazuza Ferreira, ♀ (MCN); Morro do Itacolomi Gravataí, ♂ (MCN); Porto Alegre, ♂ (MCN); Triunfo, ♂ (MCN). ARGENTINA *Misiones*: Gral. M. Belgrano, ♂ (MEG).

### *Araneus fronki* new species

Figures 179–183; Map 3

*Holotype.* Male holotypes from Lavras, Est. Minas Gerais, Brazil, 29 Mar. 1979 (W. D. Fronk), MZSP, ex MCZ. The species is named after the collector.

*Description.* Female from Ouro Preto. Carapace orange with darker branching patch and dark patches on sides of thorax. Chelicerae orange. Labium, endites brown. Sternum with orange longitudinal band,

sides brown. Coxae orange; legs orange with brown patches. Dorsum of abdomen light with dusky marks outlining a folium (Fig. 181); venter with black square and white pigment spots between square and epigynum (Fig. 182). Posterior median eyes 0.8 diameter of anterior medians, anterior laterals 0.8 diameter, posterior laterals 0.7. Anterior median eyes 0.6 diameter apart, 1.1 from laterals. Posterior median eyes 0.7 diameter apart, 2.3 from laterals. Abdomen subspherical (Fig. 181). Total length 10.5 mm. Carapace 4.5 mm long, 3.6 wide. First femur 5.2 mm, patella and tibia 6.3, metatarsus 5.1, tarsus 1.7. Second patella and tibia 5.8 mm, third 3.5, fourth 5.0.

Male from Diamantina. Coloration as in female, but legs ringed. Posterior median eyes 0.7 diameter of anterior medians, anterior laterals 0.6 diameter, posterior laterals 0.5. Anterior median eyes 0.6 diameter apart, 0.6 from laterals. Posterior median eyes 0.5 diameter apart, 1.5 from laterals. Endite without tooth. First coxa with hook. Second tibia only slightly thicker than first with some macrosetae on mesal side. Abdomen oval, pointed behind. Total length 5.5 mm. Carapace 2.7 mm long, 2.3 wide. First femur 4.9 mm, patella and tibia 5.8, metatarsus 5.6, tarsus 1.3. Second patella and tibia 4.2 mm, third 2.4, fourth 3.4.

*Variation.* The epigynum may have the median plate heavily sclerotized and black (Fig. 180) or lightly sclerotized and light in color. Total length of females 7.3 to 10.5 mm, of males 5.5 to 5.6. The three spines of the median apophysis vary slightly in their distance from each other and in the sizes of the notches between them.

*Diagnosis.* Females are distinguished from other species by the narrow posterior median plate (Fig. 180), which bulges posteriorly under the scape (Fig. 179). Males are distinguished from others by the nearly circular median apophysis with three spines and the embolus, which surrounds the conductor (Fig. 183).

*Distribution.* Minas Gerais, Brazil (Map 3).

*Paratypes.* BRAZIL *Minas Gerais*: Ouro

Prêto, Apr. 1954, 2♀ (N. L. H. Kraus, AMNH); Minha Serinha, Diamantina, Dec. 1944, 6♀, ♂; Jan.–Mar. 1945, ♀; 1945, 3♂, imm. (E. Cohn, AMNH).

### *Araneus beebei* new species Figures 184–187; Map 3

*Holotype.* Female holotype from Rancho Grande near Maracay, Aragua, Venezuela, 24 Aug. 1946 (W. Beebe), in AMNH. The species is named after the collector and explorer William Beebe.

*Description.* Female. Carapace orange with some darker orange marks, no black pigment around eyes. Chelicerae, labium, endites, sternum, coxae and legs orange. Dorsum of abdomen white (Fig. 186); venter with square white patch, spinnerets brown (Fig. 187). Posterior median eyes 0.9 diameter of anterior medians, anterior laterals 0.8 diameter, posterior laterals 0.7. Anterior median eyes 1 diameter apart, 1.6 from laterals. Posterior median eyes 0.5 their diameter apart, 2.7 from laterals. Abdomen oval with long hair (Fig. 186). Total length 5.4 mm. Carapace 2.9 mm long, 2.4 wide. First femur 3.6 mm, patella and tibia 4.1, metatarsus 3.1, tarsus 1.1. Second patella and tibia 3.5 mm, third 2.0, fourth 3.0.

*Diagnosis.* This species is distinguished from the Brazilian *A. fronki* by a different curvature of the median edge of the lateral plates of the epigynum in posterior view (Fig. 185), and a median plate wider than the laterals in ventral view (Fig. 184).

### *Araneus cohae* new species Figure 188; Map 3

*Holotype.* Male holotype from Minha Serinha, Diamantina, Minas Gerais, Brazil, Jan.–Mar. 1945 (E. Cohn), in AMNH. The species is named after the collector.

*Description.* Male. Carapace glabrous orange-brown. Chelicerae, labium, endites, sternum, and coxae orange. Legs orange-brown, faintly ringed on venter. Dorsum of abdomen with a white patch which narrows posteriorly; sides gray posteriorly with indistinct dark transverse bars on each side of white patch; venter gray with white

spot on each side. Posterior median eyes 0.8 diameter of anterior medians, anterior laterals 0.7 diameter, posterior laterals 0.6. Anterior median eyes slightly more than 1 diameter apart, 1 from laterals. Posterior median eyes 0.6 diameter apart, 2 from laterals. Endite with blunt tooth. Palpal patella with one macroseta. First coxa without hook. Second tibia thicker than first. Abdomen oval. Total length 3.4 mm. Carapace 1.9 mm long, 1.5 wide. First femur 2.3 mm, patella and tibia 2.5, metatarsus 1.9, tarsus 0.8. Second patella and tibia 2.1 mm, third 1.1, fourth 1.6.

*Note.* This might be the male of *A. bandelieri*.

*Diagnosis.* This male is distinguished from males of *A. carimagua*, *A. matogrosso*, and *A. gerais*, which also lack a coxal hook, by the straight rod-like embolus (Fig. 188). *Araneus cohnae* differs from males of all other Neotropical *Araneus* species in having only one macroseta on the palpal patella.

*Araneus matogrosso* new species  
Figure 189; Map 3

*Holotype.* Male holotype from 260 km N of Xavantina, Est. Mato Grosso [12°49'S, 51°46'W], 400 m el., Brazil, in gallery forest, Feb.-Apr. 1969 (Xavantina-Cachimbo Exped.), in MZSP, ex MCZ. The specific name is a noun in apposition after the type locality.

*Description.* Male. Carapace dark orange with a dark brown median streak from eye region to cross-shaped thoracic mark, posterior median eyes on a transverse, oval black mark. Chelicerae, labium, endites orange. Sternum orange. Coxae orange; legs dark orange with indistinct brown rings. Dorsum of abdomen with anterior dark mark on each side and posterior indistinct black folium on gray; venter with transverse black mark, on each side of which is a white spot. Posterior median eyes 0.8 diameter of anterior medians, anterior laterals 0.4 diameter, posterior laterals 0.5. Anterior median eyes 1 diameter apart, 1 from laterals. Posterior median eyes 0.6 diameter apart, 2.7 from laterals. Endite

without tooth. First coxa without hook. Second tibia very slightly thicker than first with short macrosetae. Abdomen oval, pointed behind. Total length 7.7 mm. Carapace 3.9 mm long, 3.2 wide. First femur 5.2 mm, patella and tibia 6.5, metatarsus 5.2, tarsus 1.6. Second patella and tibia 5.2 mm, third 2.7, fourth 4.2.

*Diagnosis.* This male is close to those of the Colombian species *A. carimagua* and *A. gerais* and, as these two, has a bulky twisted embolus and a median apophysis with two teeth and one blunt lateral tooth. It differs from both by having a longer median apophysis and a differently shaped terminal apophysis (Fig. 189). The embolus of *A. gerais* is wider than that of *A. matogrosso*.

*Araneus carimagua* new species  
Figure 190; Map 3

*Holotype.* Male from Carimagua [04°35'N, 71°20'W] 100 m, Meta, Colombia, Oct. 1973 (W. Eberhard), in MCZ. The specific name is a noun in apposition after the type locality.

*Description.* Male. Carapace orange with median black patch; thoracic depression a cross. Chelicerae, labium, endites, sternum, coxae orange. Legs orange with black ring on distal end of tibiae. Dorsum of abdomen white with a black patch anterior on each side and a black outline of folium posteriorly; venter light without pigment except for dusky transverse mark through middle. Posterior median eyes 0.6 diameter of anterior medians, laterals 0.5 diameter. Anterior median eyes 0.7 diameter apart, 0.6 from laterals. Posterior median eyes 0.6 their diameter apart, slightly more than 2 from laterals. Endite with indistinct, flat tooth. First coxa without hook. Second tibia thinner than first. Abdomen oval, pointed behind. Total length 5.1 mm. Carapace 2.9 mm long, 2.1 wide. First femur 3.5 mm, patella and tibia 4.1, metatarsus 3.3, tarsus 1.1. Second patella and tibia 3.4 mm, third 1.7, fourth 2.5.

*Diagnosis.* The male differs from that of *A. matogrosso* (Fig. 189) by having the



median apophysis round (Fig. 190) rather than longer than wide.

***Araneus gerais* new species**  
**Figures 191, 192; Map 3**

*Holotype.* Male holotype from Monte Santo, Est. Minas Gerais, Brazil, 1–5 Apr. 1942 (S. S. Pereira), in MZSP no. 9602. The specific name is a noun in apposition after the locality.

*Description.* Male. Carapace orange with a narrow, median, longitudinal dark streak. Chelicerae, endites, labium, and sternum light orange. Legs yellowish-white. Dorsum of abdomen with a median white pigment band and two anterior black marks on margin, sides and venter whitish. Posterior median eyes same diameter as anterior medians, laterals 0.6 diameter. Anterior median eyes slightly less than their diameter apart, 0.6 from laterals. Posterior median eyes 0.4 diameter apart, 1.3 from laterals. Endite without tooth; no tooth on palpal femur. First coxa without hook. Second tibia as thick as first. Abdomen oval, pointed behind. Total length 4.8 mm. Carapace 2.4 mm long, 2.0 wide. First femur 3.5 mm, patella and tibia 4.1, metatarsus 3.4, tarsus 1.1. Second patella and tibia 3.4 mm, third 1.7, fourth 2.5.

*Diagnosis.* This species is distinguished from *A. matogrosso* (Fig. 189) by having the median apophysis as long as wide (Fig. 191), from *A. carimagua* and *A. matogrosso* by the distally wider embolus (Fig. 191).

***Araneus expletus* (O. P.-Cambridge)**  
**Figures 193–210; Map 3**

*Epeira expleta* O. P.-Cambridge, 1889: 25, pl. 6, fig. 11, ♀. Female holotype from Senahú, Vera Paz [Verapaz], Guatemala, in BMNH, examined.

*Epeira smithi* O. P.-Cambridge, 1898: 280, pl. 37, fig. 4, ♀. Female holotype from Orizaba, Veracruz, Mexico, in BMNH, examined. NEW SYNONYMY.

*Neosconella styligera* F. P.-Cambridge, 1904: 475, pl. 45, fig. 1, ♂. Male holotype from Guatemala in BMNH, examined (not female paratype). NEW SYNONYMY.

*Neosconella expleta*.—F. P.-Cambridge, 1904: 476, pl. 45, fig. 7, ♀. Bonnet, 1958: 3061.

*Neosconella guttata* F. P.-Cambridge, 1904: 477, pl. 45, fig. 9, ♀. Female holotype, juvenile paratype

from Omilteme [Omiltemi, Guerrero, 16 km WSW Chilpancingo], Mexico, in BMNH, examined. Bonnet, 1958: 3061. NEW SYNONYMY.

*Aranea smithi*.—F. P.-Cambridge, 1904: 511, pl. 49, fig. 1, ♀. Roewer, 1942: 853.

*Aranea gratuitus* Petrunkevitch, 1911: 294. New name for *Neosconella guttata* in combination with *Araneus*, thought to be preoccupied by *Epeira guttata* Keyserling. Kraus, 1955: 22, figs. 59, 61, ♀. NEW SYNONYMY.

*Aranea expleta* [sic].—Roewer, 1942: 842.

*Aranea gratuita*.—Roewer, 1942: 843.

*Araneus smithi*.—Bonnet, 1955: 601.

*Note.* The type specimen of *expleta* (Figs. 193, 194, 201) was on a pin in alcohol; the pin was carefully removed. The holotype of *E. smithi* is relatively large and dark colored (Figs. 195, 196, 202, 205). Figures 208 and 210 were made from the holotype of *N. styligera*.

*Description.* Female holotype of *expleta*. Carapace dark brown. Chelicerae, labium, endites brown. Sternum dark brown. Coxae dusky yellow; legs dusky yellow to orange with indistinct darker rings. Dorsum of abdomen with anterior orange area surrounded by black, posterior black with paired light patches (Fig. 201). Venter dark gray with a light band on each side; light bands continue anteriorly around pedicel and curve toward each other but do not meet. Posterior median eyes 0.9 diameter of anterior medians, anterior laterals 0.8 diameter, posterior laterals 0.6. Anterior median eyes their diameter apart, their diameter from laterals. Posterior median eyes 0.3 diameter apart, slightly more than 2 from laterals. Abdomen subspherical (Fig. 201). Total length 7 mm. Carapace 3.1 mm long, 2.4 wide. First femur 3.5 mm, patella and tibia 4.1, metatarsus 2.9, tarsus 1.1. Second patella and tibia 3.4 mm, third 2.0, fourth 3.0.

Male holotype of *styligera*. Carapace dark, dusky brown. Sternum dark with median yellow streak that is wide in front, narrow behind. Legs ringed. Dorsum of abdomen with four white anterior patches, paired dark posterior marks. Posterior median eyes same diameter as anterior medians, laterals 0.8 diameter. Anterior median eyes a little more than their diameter

apart, the same from laterals. Posterior median eyes 0.4 diameter apart, 2 from laterals. Endite with tooth. First coxa with hook. Second tibia with short macrosetae. Total length 6.5 mm. Carapace 3.6 mm long, 2.9 wide. First femur 5.7 mm, patella and tibia 6.4, metatarsus 4.6, tarsus 1.4. Second patella and tibia 5.0 mm, third 2.6, fourth 3.9.

*Variation.* This species is unusually variable, less in coloration than in size and shape of the lateral plates of the epigynum in ventral view (Figs. 193, 195, 197, 199) and the shape of the median apophysis of the male palpus (Figs. 208, 209). It was first thought that there were five or six species, but as specimens accumulated, their separation became increasingly difficult. Total length of females 5.8 to 12 mm, of males 4.5 to 7.7.

*Diagnosis.* Females differ from *A. guatemus* (Fig. 211) and *A. pegnina* (Fig. 228) by the shape and length of the scape (Figs. 193, 195, 197, 199), from *A. pegnina* by the shape of the lateral plates in ventral view (Figs. 193, 195, 197, 199).

Males of *A. expletus* have a fish-tailed median apophysis (Figs. 208, 210), while *A. pegnina* males (Fig. 234) lack the fish-tail. The embolus has a distal median notch and a rod-shaped lamella (Figs. 208, 209).

*Natural History.* Females have been collected along roadsides and forest edges, and in a tropical rain forest in Chiapas. Eberhard (in letter) reports that the silk of the orb is yellow.

*Distribution.* Tamaulipas, Mexico, to western Panama at intermediate elevations (Map 3).

*Records.* MEXICO *Tamaulipas:* Santa Gracia [?] (MCZ). *Distríto Federal:* W Río Frío, 2900 m, ♀ (AMNH). *Morelos:* Cuernavaca ♀, ♂ (AMNH). *Puebla:* Huauchinango, ♀, ♂ (AMNH). *Veracruz:* Estac. de Biología Tropical, nr. La Palma, ♀, ♂ (MCZ). *Oaxaca:* Juquila, ♀ (AMNH). *Tabasco:* Teapa, 2♀ (BMNH). *Chiapas:* Oaxaca border 21 km W Rizo de Oro, ridge SE Cerro Baúl, 1615 m, ♀, ♂ (CAS); 76 km

S Palenque on rd. to Ocoingo, 700 m, ♀ (MCZ); Selva de Ocote, 32 km NW Ocozocoautla, 762 m, ♀ (CAS). GUATEMALA *Quiché:* 5 km N Chichicastenango, ♀ (AMNH). HONDURAS *Atlantida:* Lancetilla, mountain trail, 400 m, ♀ (MCZ). EL SALVADOR *Libertad:* Volcán de San Salvador, 2♀ (SMF). COSTA RICA *San José:* San José zoological park, 2♀ (AMNH, USNM); San Antonio de Escazu, 1350 m, 2♀, ♂ (MCZ). *Puntarenas:* Monteverde, ♀ (AMNH). PANAMA *Chiriquí:* Bambito, Volcán, ♀ (AMNH).

### *Araneus guatemus* new species Figures 211–214; Map 5

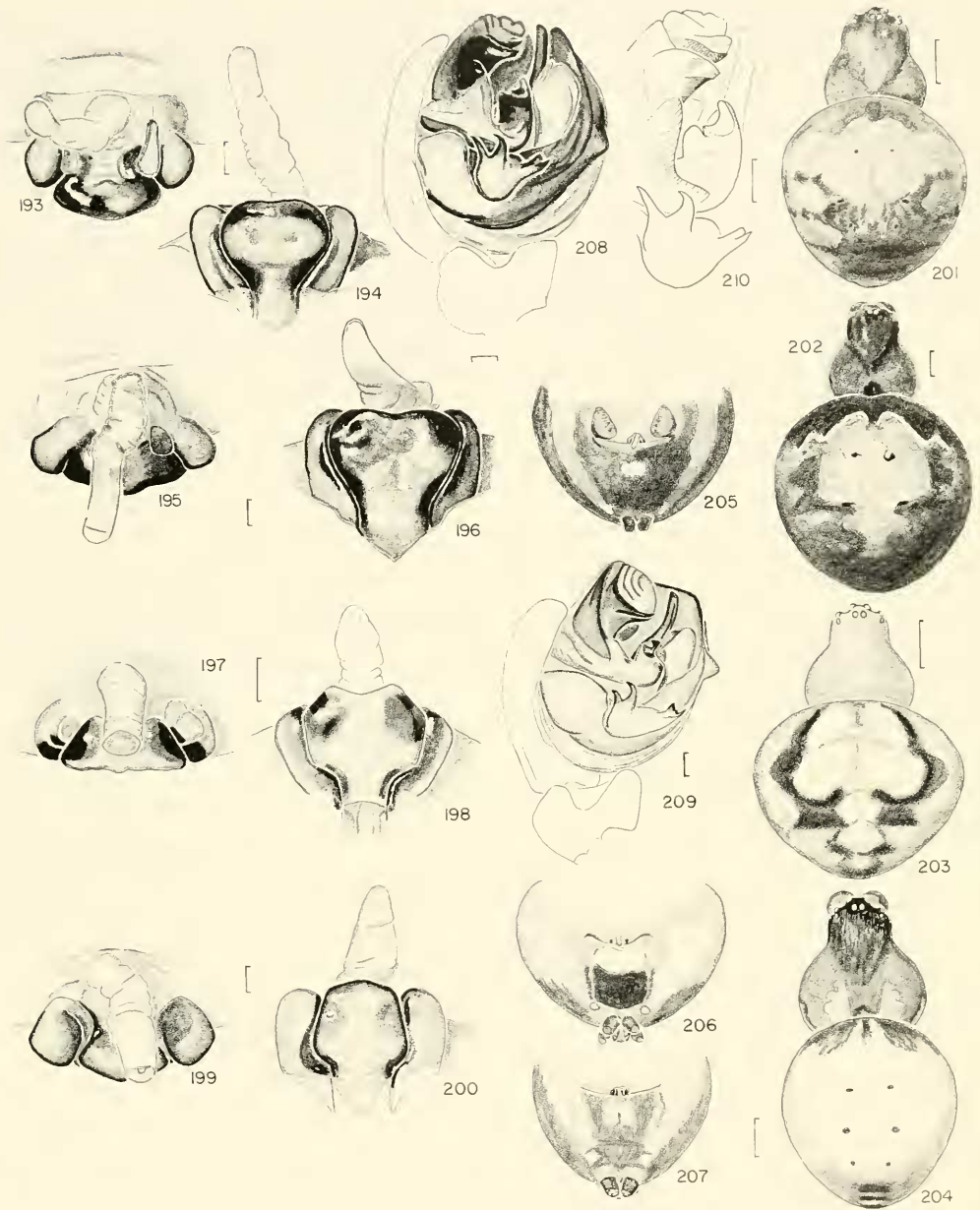
*Neosconella styliagera.*—F. P.-Cambridge, 1904: 475, pl. 45, fig. 2, ♀. Female, paratype. (Not holotype of *styliagera*.)

*Holotype.* Female from Guatemala in BMNH. The specific name is an arbitrary combination of letters.

*Note.* The specimen was on an insect pin in alcohol; the pin was carefully removed.

*Description.* Female holotype. Carapace grayish orange, sides of thorax olive. Chelicerae distally dark. Labium brown. Endites black. Sternum orange. Coxae, legs grayish orange. Dorsum of abdomen with a white T-shaped patch (Fig. 213); venter with white transverse patch behind epigynum followed by a dusky transverse patch in front of spinnerets; spinnerets brown (Fig. 214). Posterior median eyes 0.8 diameter of anterior medians, anterior laterals 0.8 diameter, posterior laterals 0.7. Anterior median eyes 1.2 diameters apart, 1.5 from laterals. Posterior median eyes 0.8 diameter apart, 2.5 from laterals. Legs with relatively short macrosetae. Abdomen as long as wide, widest anteriorly. Total length 6 mm. Carapace 2.7 mm long, 2.2 wide. First femur 3.1 mm, patella and tibia 3.6, metatarsus 2.7, tarsus 0.9. Second patella and tibia 3.0 mm, third 1.7, fourth 2.6.

*Diagnosis.* The triangular scape (Fig. 211) distinguishes the species from *A. expletus* (Fig. 195).



Figures 193–210. *Araneus expletus* (O. P.-Cambridge). 193–207. Female. 193, 195, 197, 199. Epigynum, ventral. 194, 196, 198, 200. Epigynum, posterior. 201–204. Dorsal. 205–207. Abdomen, ventral. 208–210. Male, left palpus. 208, 209. Mesal. 210. Median apophysis, embolus, subterminal and terminal apophyses. 193, 194, 201 (type of *A. expletus*, Guatemala). 195, 196, 202, 205 (holotype of *A. smithi*, Veracruz, Mexico). 197, 198, 203, 206, 209 (Veracruz, Mexico). 199, 200, 204, 207 (Costa Rica). 208, 210 (holotype of *A. styligera*, Guatemala).

Scale lines. 1.0 mm, genitalia 0.1 mm.

*Araneus rufipes* (O. P.-Cambridge)

Figures 215–218; Map 3

*Epeira rufipes* O. P.-Cambridge, 1889: 31, pl. 4, fig. 12, ♀. Female holotype from Sabó, Vera Paz [Sabob, NE corner of Baja Verapaz, 6 km E of Parulhá, 970 m, 15°15'N, 90°09'W, Guatemala], in BMNH, examined.

*Aranea rufipes*.—F. P.-Cambridge, 1904: 515, pl. 49, fig. 17, ♀.

*Aranea cambridgei* Roewer, 1942: 838. New name for *Epeira rufipes* O. P.-Cambridge, thought preoccupied by *Aranea rufipes* Linn. (= *Gonyglidium rufipes*).

*Araneus rufipes*.—Bonnet, 1955: 587.

**Description.** Female. Carapace dark brown, sides of thorax orange. Chelicerae dark brown. Sternum orange. Coxae light orange. Legs orange. Dorsum of abdomen white, without markings (Fig. 217); venter with white pigment patch behind epigynum, surrounded by dusky area; a pair of white spots in front of spinnerets; spinnerets brown (Fig. 218). Posterior median eyes 0.8 diameter of anterior medians, laterals 0.7 diameter. Anterior median eyes 1.3 diameters apart, 2 from laterals. Posterior median eyes 0.6 diameter apart, slightly more than 3 from laterals. Abdomen spherical. Total length 8.5 mm. Carapace 4.2 mm long, 3.2 wide. First femur 4.1 mm, patella and tibia 4.7, metatarsus 3.1, tarsus 1.2. Second patella and tibia 4.0 mm, third 2.7, fourth 3.8.

**Diagnosis.** Because of the unusual markings on the venter of the abdomen (Fig. 218), this species appears close to *A. pegnia* and *A. guatemus*. It differs from both these species by the nearly circular scape (Fig. 215).

*Araneus habilis* (O. P.-Cambridge)

Figures 219–222; Map 3

*Epeira habilis* O. P.-Cambridge, 1889: 28, pl. 8, fig. 3, ♀. Female syntypes from Chilascó Mts., Cobán, and Magdalena near Antigua, Guatemala, in BMNH, examined. Keyserling, 1892: 220, pl. 10, fig. 163, ♀.

*Neosconella habilis*.—F. P.-Cambridge, 1904: 477, pl. 45, fig. 8, ♀. Bonnet, 1958: 3061.

*Aranea habilis*.—Roewer, 1942: 844.

**Note.** In 1969, I made a sketch of specimens labeled *Neosconella habilis* from

Chilascó and examined specimens from Cobán. In 1987, I examined and illustrated (Figs. 219–222) a specimen labeled, presumably by Pocock, “*Araneus hebilis* Keyserling: Type, Guatemala.” This vial also contained a blue bordered Keyserling label, “*Epeira hebilis*.” All appear to be the same species.

**Description.** Female from Guatemala. Carapace dark orange. Sternum brown, coxae yellow. Legs dark orange, with indistinct darker rings on ends of tibiae and metatarsi. Dorsum of abdomen white, anterior and sides black (Fig. 221). Venter with pair of white spots behind epigynum (Fig. 222). Posterior median eyes same diameter as anterior medians, anterior lateral eyes 0.6 diameter, posterior laterals 0.8. Anterior medians 1.1 diameters apart, 1.2 from laterals. Posterior medians 0.3 diameter apart, 1.8 from laterals. Abdomen subspherical. Total length 5.8 mm. Carapace 2.7 mm long, 2.1 wide. First femur 2.9 mm, patella and tibia 3.5, metatarsus 2.5, tarsus 1.0. Second patella and tibia 2.9 mm, third 1.8, fourth 2.5.

**Diagnosis.** This species differs from related ones by having the lateral plates fused anteriorly at the origin of the scape, so they surround the median plate (Fig. 219).

**Distribution.** Chiapas, Mexico, to Guatemala (Map 3).

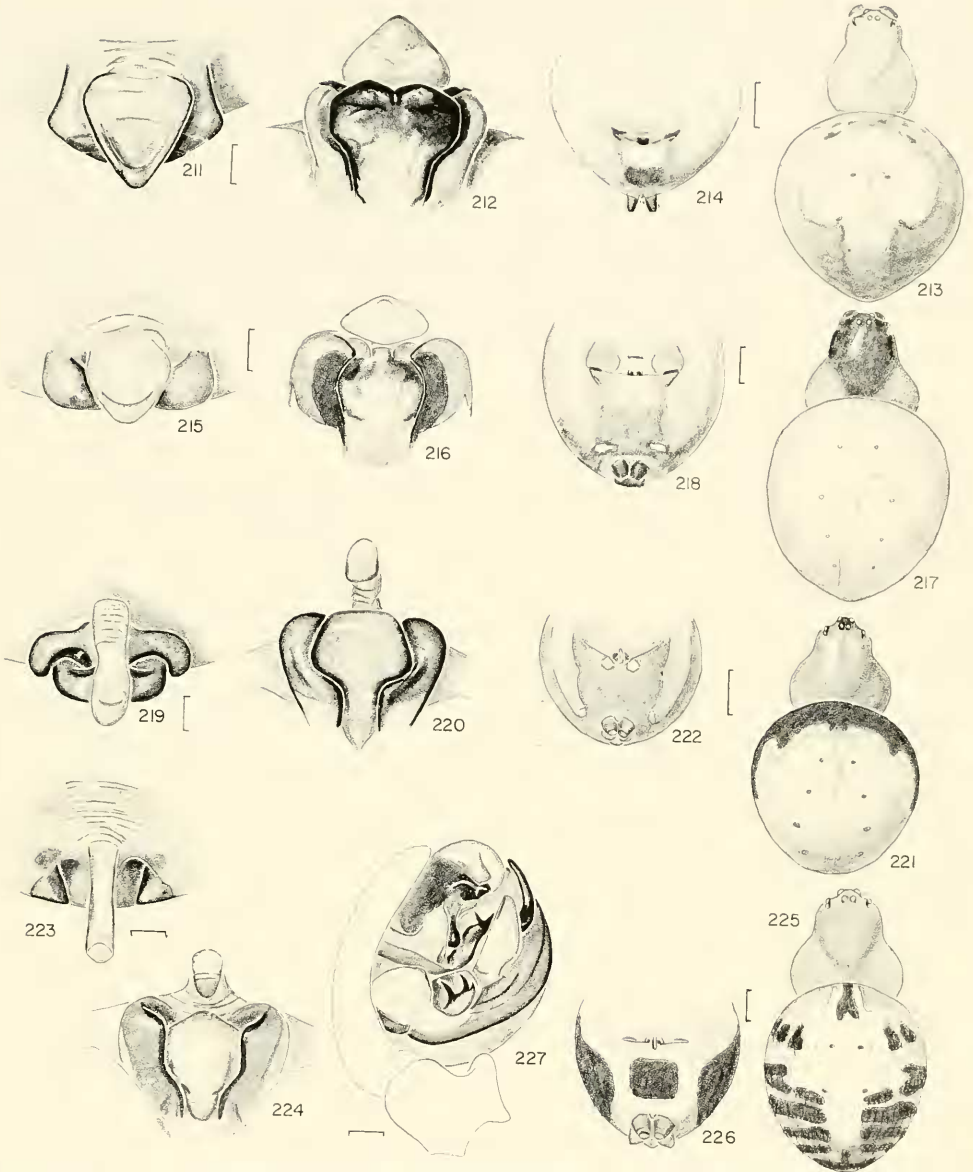
**Record.** MEXICO *Chiapas*: Triunfo, 2000 m, Apr. 1942, ♀ (H. Wagner, AMNH).

*Araneus galero* new species

Figures 223–227; Map 3

**Holotype.** Female holotype, male and immature paratypes from Cerro Galero, Panamá Prov., Panama, July 1981 (W. Eberhard, no. 2222), in MCZ. The specific name is a noun in apposition after the type locality.

**Description.** Female. Carapace orange, sides of thorax lighter. Sternum and legs orange, leg four with distal half of tibia and metatarsus dark. Dorsum of abdomen with transverse black marks, which have more setae than light areas (Fig. 225). Venter with black square (Fig. 226). Posterior median and anterior lateral eyes 0.8 di-



Figures 211–214. *Araneus guatemus* n. sp., female. 211. Epigynum, ventral. 212. Epigynum, posterior. 213. Dorsal. 214. Abdomen, ventral.

Figures 215–218. *A. rufipes* (O. P.-Cambridge), female. 215. Epigynum, ventral. 216. Epigynum, posterior. 217. Dorsal. 218. Abdomen, ventral.

Figures 219–222. *A. habilis* (O. P.-Cambridge), female. 219. Epigynum, ventral. 220. Epigynum, posterior. 221. Dorsal. 222. Abdomen, ventral.

Figures 223–227. *A. galero* n. sp. 223–226. Female. 223. Epigynum, ventral. 224. Epigynum, posterior. 225. Dorsal. 226. Abdomen, ventral. 227. Male, left palpus.

Scale lines. 1.0 mm, genitalia 0.1 mm.

iameter of anterior medians, posterior lateral eyes 0.7 diameter. Anterior median eyes their diameter apart, their diameter from laterals. Posterior median eyes 0.7 diameter apart, a little over 2 from laterals. Abdomen broadly oval. Total length 9.2 mm. Carapace 4.7 mm long, 3.7 wide. First femur 5.5 mm, patella and tibia 6.1, metatarsus 4.0, tarsus 1.6. Second patella and tibia 5.4 mm, third 3.3, fourth 4.9.

Male. Head dark brown, brown continuing as a narrower band to posterior border of thorax, two brown patches on sides of orange thorax. Chelicerae dark brown. Sternum and coxae orange. First and second femur with distal ends and patellae dark brown. Abdomen colored as in female. Posterior median eyes 0.8 diameter of anterior medians, lateral eyes 0.7 diameter. Anterior median eyes their diameter apart, a little less than their diameter from laterals. Posterior median eyes 0.7 diameter apart, 1.7 from laterals. Endite with indistinct tooth. First coxa without hook. Second tibia same thickness as first. Abdomen subspherical. Total length 5.0 mm. Carapace 2.5 mm long, 2.1 wide. First femur 3.7 mm, patella and tibia 4.3, metatarsus 3.1, tarsus 1.2. Second patella and tibia 3.2 mm, third 1.8, fourth 2.7.

*Variation.* Total length of females 7.7 to 10.0 mm, of males 4.9 to 5.0. The small distal tooth in the median apophysis of the male's palpus may be absent.

*Diagnosis.* The female is distinguished from others by the shape of the epigynum and by having a hollow behind the scape in ventral view, flanked by a triangular sclerotized sclerite on each side (Fig. 223). The male is distinguished from that of *A. pegnica* (Fig. 234) by the curved embolus, its tip pointing to the conductor (Fig. 227). The cap on the embolus in Figure 227 is often absent.

*Distribution.* Panama to Colombia (Map 3).

*Paratypes.* PANAMA *Panamá:* Playa Corona nr. San Carlos, 8 Aug. 1983, ♀ (H., L. Levi, MCZ); nr. Arraiján, 18 July 1979, ♀ (M. Stowe, MCZ); Cerro Galero, 30 m, June 1985, ♂, imm. (W. Eberhard, no. 2843, MCZ); Cerro Galero, July 1981, ♂, July 1985, ♂, imm. (W. Eberhard, nos. 2843, 2863, MCZ); Barro Colorado Island, Aug. 1974, ♀, ♂ (W. Eberhard, no. 901, MCZ). COLOMBIA *Caquetá:* Río Orteguzaza, 200 m, Aug.–Sept. 1947, ♀ (L. Richter, AMNH). PERU *Loreto:* Jenaro Herrera nr. Iquitos, 04°55'S, 73°45'W, ♀ (MHNSM).

### *Araneus pegnica* (Walckenaer) Figures 228–234; Map 3

*Epeira pegnica* Walckenaer, 1841: 80. Name for Abbot's Georgia Spiders manuscript, figs. 375, 389, 484. Copy of manuscript in MCZ, examined.

*Epeira globosa* Keyserling, 1865: 820, pl. 18, figs. 19, 20, ♀. Two female syntypes from New Granada in BMNH, examined.

*Epeira solersioides* O. P.-Cambridge, 1889: 25, pl. 7, fig. 15, ♂. Male holotype from Bugaba, Panama, in BMNH, examined.

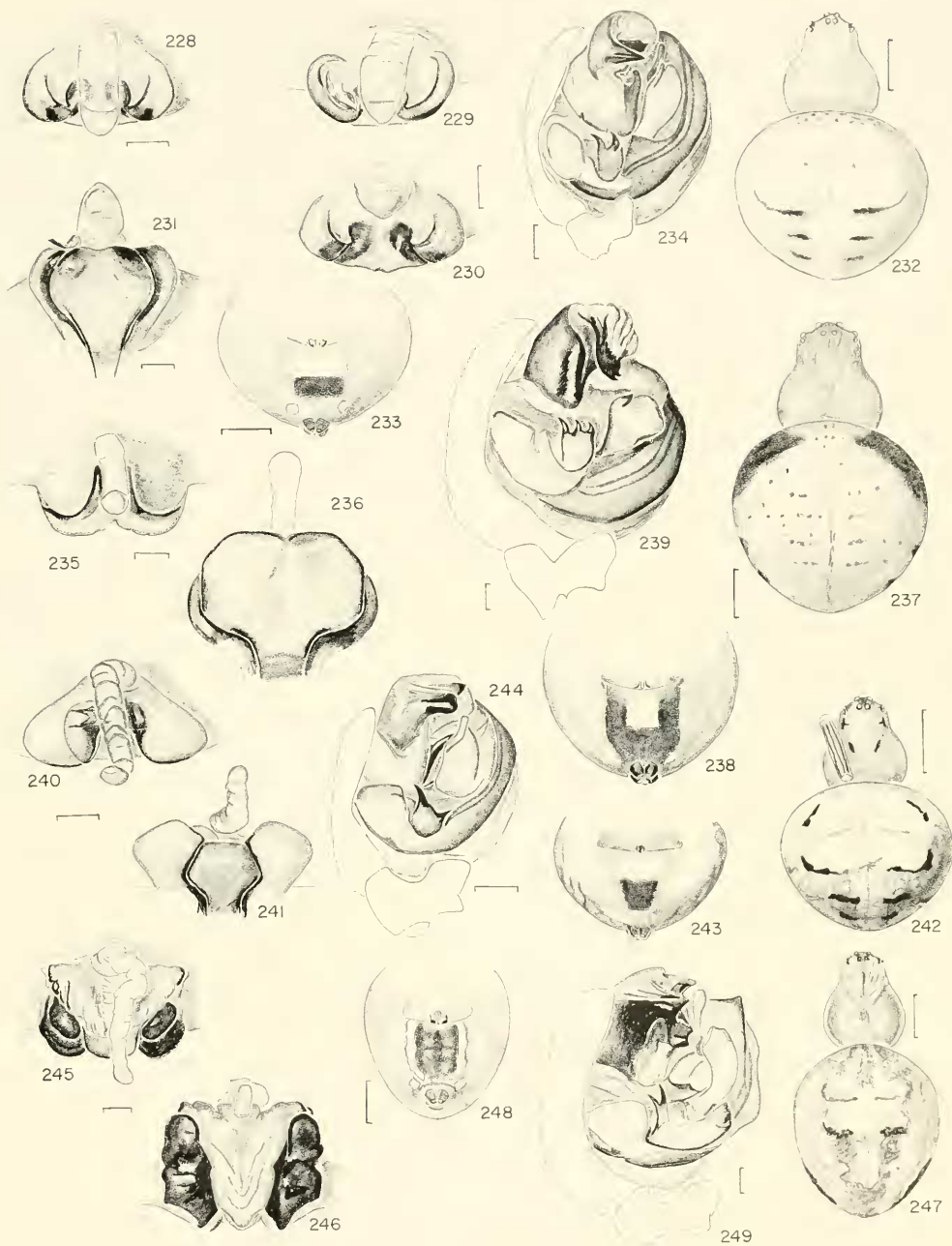
*Neosconella bella* Chamberlin and Ivie, 1942: 78, figs. 223, 224, ♂. Male holotype from Laguna Beach, California, in AMNH.

*Araneus pegnica:*—Levi, 1973: 546, figs. 426–428, ♀, ♂, map 6.

*Description.* Female from Panama. Carapace, sternum, legs orange. Dorsum of abdomen with four white patches, and three pairs of dusky transverse marks posteriorly (Fig. 232); venter with white patch posterior to epigynum, dusky behind (Fig. 233). Posterior median eyes same diameter as anterior medians, lateral eyes 0.8 diameter. Anterior median eyes a little more than their diameter apart, the same from laterals. Posterior median eyes 0.7 diameter apart, a little less than 2 from laterals. Abdomen oval, wider than long. Total

Figures 228–234. *Araneus pegnica* (Walckenaer). 228–233. Female. 228, 229. Epigynum, ventral. 230. Epigynum, ventroposterior. 231. Epigynum, posterior. 232. Dorsal. 233. Abdomen, ventral. 234. Male, left palpus.

Figures 235–239. *A. thaddeus* (Hentz). 235–236. Female. 235. Epigynum, ventral. 236. Epigynum, posterior. 237. Dorsal. 238. Abdomen, ventral. 239. Male palpus.



Figures 240–244. *A. lineatipes* (O. P.-Cambridge). 240–243. Female. 240. Epigynum, ventral. 241. Epigynum, posterior. 242. Dorsal, with first left femur. 243. Abdomen, ventral. 244. Male palpus.

Figures 245–249. *A. talca* n. sp. 245–248. Female. 245. Epigynum, ventral. 246. Epigynum, posterior. 247. Dorsal. 248. Abdomen, ventral. 249. Male palpus.

Scale lines. 1.0 mm, genitalia 0.1 mm.

length 5.4 mm. Carapace 2.3 mm long, 1.9 wide. First femur 2.7 mm, patella and tibia 3.1, metatarsus 2.1, tarsus 0.8. Second patella and tibia 2.5 mm, third 1.5, fourth 2.1.

Male from Panama. Carapace, coxae, and legs orange. Dorsum of abdomen with white pigment; venter orange-gray. Carapace high. Posterior median eyes same diameter as anterior medians, lateral eyes 0.8 diameter. Anterior median eyes their diameter apart, a little more than their diameter from laterals. Posterior median eyes 0.6 diameter apart, 1.4 from laterals. Endite with tooth. First coxa with hook. Second tibia thicker than first, with macrosetae. Total length 3.3 mm. Carapace 1.8 mm long, 1.5 wide. First femur 2.5 mm, patella and tibia 2.9, metatarsus 1.8, tarsus 0.6. Second patella and tibia 1.9 mm, third 1.1, fourth 1.9.

*Variation.* Total length of females 3.5 to 6.3 mm, of males 2.5 to 4.3. The smallest specimens came from Jamaica. The shape of the notch on each side of the scape of the epigynum is variable.

*Diagnosis.* The female is distinguished by the notch on each side of the base of the epigynum (Figs. 228–230), the dark patches underneath the scape, and the rounded shape of the median plate in posterior view (Fig. 231). The male is distinguished by the two-clawed median apophysis (which often projects) and the slightly curved lateral edge of the embolus, with the tip of the embolus pointing toward the tip of the cymbium (Fig. 234).

*Natural History.* Specimens have been obtained with the Berlese funnel in Panama, sweeping roadside bushes in Oaxaca, on a forest path in Yucatan. Some Costa Rican specimens came from wasp nests.

*Distribution.* From Massachusetts and Indiana to Venezuela and coast of Ecuador, the Bahamas, Cuba, and Jamaica (Map 3).

*Records from Mexico and the Neotropics.* MEXICO *Tamaulipas:* 1.6 km N Gómez Farías (USNM). *Nuevo León:* 32 km W Linares, nr. León (CAS). *Baja Califor-*

*nia:* San Antonio (AMNH). *San Luis Potosí:* 10 km W San Joaquín (AMNH). *Durango:* Durango (AMNH); Rodeo (AMNH). *Jalisco:* hillside above Plan de Barrancas (AMNH); Barranca de Oblatos Guadalajara (AMNH). *Veracruz:* Jalapa (AMNH); Plan del Río (AMNH); Papantla (AMNH); Tuxpan (AMNH); Conejos (AMNH); Veracruz (AMNH). *Puebla:* Acatlán (AMNH); 7 km SW Acatepec (MCZ). *Morelos:* Cuernavaca (AMNH). *Guerrero:* Teloloapan, 1200 m (AMNH); Chilpancingo (AMNH). *Oaxaca:* Oaxaca, 1700 m (AMNH); Huajuapán (AMNH); Palomares (MCZ); 23 km SW Valle Nacional, Hwy. 175, 2600 m (MCZ); 17 km SW Valle Nacional, 650 m (MCZ). *Tabasco:* Teapa (BMNH). *Campeche:* Campeche (BMNH). *Yucatan:* Mérida (MCZ); Grutas de Loltan, 7 km S Oxkutzcab (MCZ); 12 km S Muna, Hwy. 261 (MCZ); Colonia Yucatan (AMNH); Uxmal (AMNH); Chichén Itzá (AMNH). *Chiapas:* Tuxtla Gutiérrez (AMNH); Chiapa (AMNH); Cintalapa (AMNH); Ocozacoatlá (AMNH). GUATEMALA Tikal (MCZ). HONDURAS Tela (AMNH); Tsecucigaga, [?Tegucigalpa] (AMNH). EL SALVADOR Quezaltepeque (CAS). COSTA RICA *Alajuela:* El Higuito (MCZ). *Puntarenas:* Sirena (MCZ). *Guanacaste:* Palo Verde, Bagaces (MCZ); 8 km S Cañas (MZCR) PANAMA *Bocas del Toro:* Rio Changuinola (MCZ). *Colón:* Fort Sherman (MCZ). *Panamá:* Madden Dam forest (MCZ); Corozal (MCZ); Bella Vista (MCZ); Ancon (MCZ); Taboga Isl. (MCZ); Summit (MCZ); El Valle (MCZ); Exp. Gardens (MCZ); Isla Barro Colorado (MCZ); Fort Kobbe (MCZ); nr. Balboa (MCZ). *Coclé:* Aguadulce (MIUP).

BAHAMAS Whale Cay (CAS). South Bimini (AMNH). Grand Bahama Isl. (AMNH). Nassau (AMNH). CUBA *Pinar del Río:* Sierra de Anafe (AMNH); San Vicente (AMNH); Peninsula de Guanacabibes (AMNH). JAMAICA *St. Andrew:* Mona Rd. (MCZ). *St. Catherine:* Ewarton (MCZ); Rio Coore Gorge (MCZ).

VENEZUELA *Carabobo:* San Esteban



(AMNH). COLOMBIA *Magdalena*: Gaira, 10 m (MCZ); Sierra Nevada de Santa Marta (MCZ); San Pablo-San Pedro, 700 m (JAK). ECUADOR *Manabi*: Manta, ♂ (H. Exline, CAS). *Guayas*: Colonche, ♀ (H. Exline, CAS).

*Araneus thaddeus* (Hentz)  
Figures 235–239; Map 3

*Epeira thaddeus* Hentz, 1847: 473, pl. 31, fig. 6, ♀.  
Female specimens from Alabama, destroyed.

*Araneus thaddeus*:—Levi, 1973: 544, figs. 415–425, ♀, ♂.

*Note*. The synonymy of *Epeira meropes* Keyserling with *thaddeus* (Levi, 1973) proved to be an error.

*Description*. Female from Mexico. Carapace orange-brown with white setae; sternum dark brown. Coxae light brown; legs orange and brown ringed. Dorsum of abdomen light brown, dark anteriorly on sides (Fig. 237); venter with wide black median band enclosing a square white patch behind epigynum (Fig. 238). Eyes subequal. Anterior median eyes 2 diameters apart, 2 from laterals. Posterior median eyes a little less than their diameter apart, a little more than 2 from laterals. Abdomen spherical, wider than long (Fig. 237). Total length 6.7 mm. Carapace 2.8 mm long, 2.3 wide. First femur 3.4 mm, patella and tibia 3.9, metatarsus 2.7, tarsus 0.9. Second patella and tibia 3.2 mm, third 1.9, fourth 2.7.

Male from Mexico. Coloration less distinct than that of female. Posterior median and lateral eyes 0.6 diameter of anterior median eyes. Anterior median eyes a little more than their diameter apart, the same from laterals. Posterior median eyes a little less than their diameter apart, 2.8 from laterals. Endite with tooth. First coxa with hook. Second tibia slightly thicker than first. Total length 5.2 mm. Carapace 2.8 mm long, 2.3 wide. First femur 4.7 mm, patella and tibia 5.3, metatarsus 3.8, tarsus 1.1. Second patella and tibia 3.9 mm, third 2.0, fourth 2.7.

*Variation*. Total length of Mexican females 6.2 to 7.9 mm, of males 4.3 to 5.2.

*Diagnosis*. Females can be separated

from those of *A. pegnia* (Fig. 228) by the two concave borders of the median plate in ventral view (Fig. 235) and by the large, transverse, rectangular median plate in posterior view (Fig. 236). The male differs from others by the presence of three teeth on the median apophysis, and by the large terminal apophysis tipped by two small teeth (Fig. 239).

*Natural History*. Most records are from high elevations and one from a pine forest in the state of Mexico.

*Distribution*. Eastern United States, except Florida, scattered records from western United States to the Strait of Tehuantepec, Mexico.

*Records from Mexico*. *Durango*: 10 km NE El Salto, 11 Aug. 1947, ♂ (W. J. Gertsch, AMNH); 16 km E El Salto, 8 Aug. 1947, ♂ (W. J. Gertsch, AMNH). *México*: Oxtotilpan, ♀, ♂ (M. L. Jiménez, MCZ). *Distrito Federal*: Mexico City, 25 Sept. 1957, 3♀, ♂ (R. Dreisbach, MCZ); Santa Rosa, 24 July 1947, ♂ (H. Wagner, AMNH); W Río Frío, 2900 m, 22 Aug. 1964, 7♀, 5♂ (J., W. Ivie, AMNH); 16 km S Mexico City, 29 Nov. 1948, 3♀ (R. B. Fischer, AMNH); Desierto de los Leones, 4 Aug. 1946, ♂ (C. Goodnight, AMNH); Contreras, 14 Aug. 1946, ♀ (C. Goodnight, Bordas, AMNH). *Puebla*: 10 km E Río Frío, 22 Aug. 1964, ♀ (J., W. Ivie, AMNH). *Oaxaca*: on ridge E Cerro San Felipe, 2500–2700 m, 28 Sept. 1961, ♂ (C. M., M. R. Bogert, AMNH).

*Araneus lineatipes* (O. P.-Cambridge)  
Figures 240–244; Map 3

*Epeira lineatipes* O. P.-Cambridge, 1889: 30, pl. 7, figs. 17, 18, ♀, ♂. Male and two female syntypes from road between Retalhuleu and Mazatenango, Santa Ana and Guatemala City, Guatemala, in BMNH, examined. Keyserling, 1892: 190, pl. 9, figs. 141, 142, ♀, ♂.

*Neosconella lineatipes*:—F. P.-Cambridge, 1904: 476, pl. 45, figs. 5, 6, ♀, ♂. Bonnet, 1958: 3062.

*Aranea lineatipes*:—Roewer, 1942: 846.

*Description*. Female from San Luis Potosí, Mexico. Carapace orange-yellow with black mark on each side of head. Sternum orange-yellow. Coxae orange-yellow, an-

terior two with black spot. Legs orange-yellow, first and second femur with three ventral black longitudinal lines on venter (Fig. 242). Dorsum of abdomen white anteriorly, black transverse bands posteriorly; venter with white spots posterior to epigynum, black anterior to spinnerets, white spot on each side slightly anterior to spinnerets (Fig. 243). Posterior median eyes 1.2 diameters of anterior medians, lateral eyes 0.8 diameter. Anterior medians a little more than their diameter apart, the same from laterals. Posterior medians 0.8 diameter apart, 1.2 from laterals. Abdomen oval (Fig. 242). Total length 3.0 mm. Carapace 1.4 mm long, 1.3 wide. First femur 1.7 mm, patella and tibia 2.0, metatarsus 1.2, tarsus 0.7. Second patella and tibia 1.6 mm, third 0.9, fourth 1.3.

Male from San Luis Potosí. Color as in female; leg lines less distinct. Posterior median eyes 0.8 diameter of anterior medians, lateral eyes 0.6 diameter. Anterior medians their diameter apart, 0.7 from laterals. Posterior medians 0.8 diameter apart, 1.5 from laterals. Endite with tooth. First coxa with hook. Second tibia swollen, with macrosetae; second femur with ventral row of macrosetae. Total length 2.7 mm. Carapace 1.5 mm long, 1.2 wide. First femur 1.7 mm, patella and tibia 2.0, metatarsus 1.3, tarsus 0.5. Second patella and tibia 1.3 mm, third 0.9, fourth 1.2.

*Variation.* Total length of females 2.9 to 4.1 mm, of males 2.3 to 2.7.

*Diagnosis.* This small species is separated from all others by the distinct black lines on the venter of the femora of legs (Fig. 242). The epigynum has a notch in the base behind the narrow scape (Fig. 240). The male is separated from others by the round median apophysis with two spines, one pointing distally and one at right angles laterally (Fig. 244).

*Natural History.* Specimens have been collected from semi-desert scrub in Michoacan and short tropical rain forest in Campeche. All come from low elevations.

*Distribution.* Mexico to Honduras (Map 3).

*Records.* MEXICO *San Luis Potosí:* Valles (AMNH); Tamazunchale (AMNH). *Nayarit:* 8 km E, 6.5 S San Blas (WS); San Blas (AMNH); Tepic (AMNH). *Colima:* Las Humedades, Armeriá (AMNH). *Michoacan:* Apatzingán, 400 m (MCZ). *Guerrero:* Acamixtla (AMNH); Acapulco (MCZ). *Oaxaca:* Puerto Escondido (MCZ); Tehuantepec (AMNH); 3 km SE Niltepec (AMNH); Puerto Escondido (MCZ). *Campeche:* Chicanna ruins, ca. 8 km W Xpujil (MCZ). *Chiapas:* 5 km NE Los Amates at Hwy. 190 (REL); Cintalapa (AMNH); Ocosingo, 900 m (AMNH); El Real (AMNH). GUATEMALA Ayutla (AMNH); Rabinal (AMNH); Los Ramones (AMNH). HONDURAS Copán (AMNH).

*Araneus talca* new species  
Figures 245–249; Map 3

*Holotype.* Female holotype, and three female and four male paratypes from Alto de Vilches, Andes mountains, Talca Prov., Chile, 17–24 Oct. 1964 (L. Peña), in MCZ. The specific name is a noun in apposition after the type locality.

*Description.* Female. Carapace orange-yellow, head darker and with white setae, sides of carapace with a darker band. Chelicerae orange-yellow. Labium, endites, sternum brown. Coxae, legs dusky yellow, lightest proximally, darkest distally. Dorsum of abdomen with black spots forming an indistinct folium, sides darker gray with a white border toward the dorsum (Fig. 247); venter black between epigynum and spinnerets with a white line on each side and a white spot on the sides anterior of the spinnerets (Fig. 248). Posterior median eyes 1.3 diameters of anterior medians, laterals 1.1 diameters. Anterior median eyes slightly less than 2 diameters apart, the same from laterals. Posterior median eyes their diameter apart, 2.5 from laterals. Abdomen elongate oval (Fig. 247). Total length 5.8 mm. Carapace 2.3 mm long, 1.9 wide. First femur 2.4 mm, patella and tibia 3.1, metatarsus 1.9, tarsus 0.8. Second patella and tibia 2.5 mm, third 1.5; fourth 2.2.

Male. Color as in female, except ster-

num lighter and abdominal pattern more distinct. Posterior median eyes 1.3 diameters of anterior medians, laterals 1.1 diameters. Anterior median eyes slightly more than their diameter apart, 1.2 from laterals. Posterior median eyes their diameter apart, 2 from laterals. Endite with tooth. First coxa with hook. Second tibia thicker than first, with macrosetae. Abdomen oval. Total length 4.4 mm. Carapace 2.3 mm long, 1.8 wide. First femur 2.1 mm, patella and tibia 2.7, metatarsus 1.5, tarsus 0.7. Second patella and tibia 2.1 mm, third 1.2, fourth 1.8.

*Variation.* Total length of females 5.1 to 7.4 mm, of males 4.4 to 5.2. The female commonly has a dorsal median white line on the abdomen, but always has a dark patch bordered by white posteriorly on each side (Fig. 247).

*Diagnosis.* Females can be separated from other *Araneus* species by the lobes of the sclerotized lateral plates, which are visible posteriorly on each side of the triangular base of the epigynum (Fig. 245). The male differs from *A. concepcion* (Fig. 253) by having the two spines of the median apophysis on a long neck (Fig. 249).

*Distribution.* Neuquén, Chubut Provinces, Argentina and Chile in Andes (Map 3). The northernmost Chilean localities may be mislabeled in the vial.

*Natural History.* One collection from Concepción is marked "edge of field."

*Paratypes.* ARGENTINA *Neuquén:* Pucará (MACN); Lago Lacar E Huahun (ZMK). *Río Negro:* El Bolsón (AMNH). *Chubut:* Lago Puelo (AMNH). CHILE *Antofagasta:* Antofagasta (IRSNB); E Taltal, 600 m (AMNH). *Coquimbo:* El Bato, E Illapel (AMNH). *Valparaíso:* Quebr. de Córdoba, El Tabo (AMNH); Valparaíso (MCZ). *Santiago:* Q. Córdoba (AMNH); Las Cruces Parral (IRSNB); Pirque (AMNH); Quilicura (AMNH); Piche Alhué (MCZ); Santiago (AMNH). *O'Higgins:* Pilay, 800 m (AMNH). *Curicó:* Las Tablas E Curicó (AMNH); E Curicó (AMNH). *Linares:* Fundo Malcho Andes in Parral (MCZ). *Ñuble:* Recinto Chillan

area, 1000 m (AMNH). *Concepción:* Concepción (AMNH); Bosque Ramuntcho (AMNH); Hualpen, 60 m (AMNH). *Bío-Bío:* El Manzano nr. Contulmo (AMNH); Angol (CAS). *Malleco:* Curacautín (AMNH); 20 km E Temuco (CAS); Malalcahuello (AMNH). *Cautín:* 30 km NE Villarrica (MCZ); Toltén (AMNH). *Valdivia:* Puyehue, 600 m (AMNH); NW Panguipulli (AMNH). *Osorno:* Pucatrihue (AMNH); Purranque (AMNH); Anticura nr. Puyehue (AMNH). *Llanquihue:* Correntoso (MCZ). *Chiloé:* Río Ventisquero, Lago Velcho (AMNH). [?]: Los Muermos Forest (CAS).

### *Araneus concepcion* new species Figures 250–253; Map 3

*Holotype.* Female holotype and two female paratypes from Bosque de Ramuntcho, Concepción Prov., Chile, 12–13 Dec. 1963 (A. F. Archer), in AMNH, one paratype in MCZ. The specific name is a noun in apposition after the type locality.

*Description.* Female. Carapace orange, head slightly dusky. Chelicerae, labium, endites orange. Sternum orange. Coxae orange; legs orange, distal articles dusky, indistinctly ringed. Dorsum of abdomen spotted without distinct pattern (Fig. 252); venter dusky-gray between epigynum and including spinnerets, a white line on each side of dusky patch. Posterior median and anterior lateral eyes 1.3 diameters of anterior medians, posterior laterals 1 diameter. Anterior median eyes slightly less than 2 diameters apart, 2 from laterals. Posterior median eyes 0.7 their diameter apart, 2.5 from laterals. Abdomen as wide as long, subtriangular, with humps indistinct (Fig. 252). Total length 6.0 mm. Carapace 2.8 mm long, 2.2 wide. First femur 2.8 mm, patella and tibia 3.5, metatarsus 2.1, tarsus 0.8. Second patella and tibia 3.0 mm, third 1.7, fourth 2.7.

Male from type locality. Color as in female. Eyes subequal. Anterior median eyes 1.2 diameters apart, 1.2 from laterals. Posterior median eyes 0.8 diameter apart, 2 from laterals. Endite with tooth. First coxa with hook. Second tibia thicker than first,

with some macrosetae. Abdomen oval, wider in front than behind. Total length 4.2 mm. Carapace 2.3 mm long, 2.1 wide. First femur 2.7 mm, patella and tibia 3.5, metatarsus 1.9, tarsus 0.7. Second patella and tibia 2.6 mm, third 1.6, fourth 2.2.

*Variation.* Total length of females 6.0 to 6.9 mm.

*Diagnosis.* The female differs from *A. zapallar* (Figs. 254, 255) by having a longer base (Fig. 250) and larger lateral plates in posterior view (Fig. 251). The proximal biforked end of the median apophysis of the male's palpus has a shorter neck (Fig. 253) than that of *A. talca* (Fig. 249).

*Paratypes.* CHILE *Coquimbo*: 5 km N Los Vilos, 5 Jan. 1985, ♂ (N. Platnick, O. Francke, AMNH). *Valparaíso*: central coast, 31 Oct. 1982, ♂ (AMNH). *Ñuble*: Cobquecura Tregualemu, 31 Dec. 1958, 2 ♀ (L. Peña, IRSNB). *Concepción*: Bosque Remuncho, 12–13 Dec. 1961, 3♀, 2♂ (A. F. Archer, AMNH).

### *Araneus zapallar* new species

Figures 254–257; Map 3

*Holotype.* Female holotype and female paratype from Valparaíso, Valparaíso Prov., Chile, 22 Dec. 1972 (W. C. Sedgwick), in MCZ. The specific name is a noun in apposition after the locality of a paratype.

*Description.* Female paratype from Zapallar. Carapace orange with short white setae, thorax underlain by two white pigment patches in center. Chelicerae orange. Labium, endites dark orange. Sternum or-

ange underlain with white pigment spots. Coxae orange; legs orange with indistinct darker rings on last legs. Dorsum of abdomen with transverse dusky stripes and one white transverse band (Fig. 256); venter with whitish square, lightest around margin, and two white spots on each side of spinnerets (Fig. 257). Posterior median eyes 1.3 diameters of anterior medians, laterals 1.1 diameters. Anterior median eyes 1.5 diameters apart, 1.5 from laterals. Posterior median eyes their diameter apart, 2.5 from laterals. Abdomen slightly longer than wide, with rounded lateral humps (Fig. 256). Total length 5.3 mm. Carapace 2.1 mm long, 1.8 wide. First femur 2.1 mm, patella and tibia 2.6, metatarsus 1.6, tarsus 0.7. Second patella and tibia 2.1 mm, third 1.3, fourth 1.9.

*Variation.* Total length of females 5.0 to 7.0 mm.

*Diagnosis.* This species differs from *A. concepcion* (Figs. 250, 251) by having a shorter base (Fig. 254) and smaller lateral plates. The median depression of the median plate is wider than long in posterior view (Fig. 255).

*Paratypes.* CHILE *Coquimbo*: 5 km N Los Vilos, 5 Jan. 1985, ♀ (N. Platnick, O. Francke, AMNH). *Aconcagua*: Zapallar, 27 Nov. 1950, 2♀ (E. S. Ross, A. E. Michelbacher, CAS); Los Molles, 2 m, 9 Jan. 1985, ♀ (N. Platnick, O. Francke, AMNH). *Valparaíso*: central coast, 31 Oct. 1982, ♀ (L. Peña, AMNH); Valparaíso, 22 Dec.

Figures 250–253. *Araneus concepcion* n. sp. 250–252. Female. 250. Epigynum, ventral. 251. Epigynum, posterior. 252. Dorsal. 253. Male, left palpus.

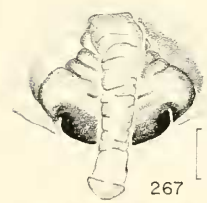
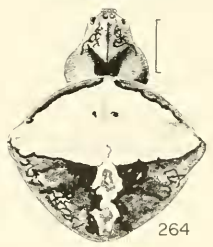
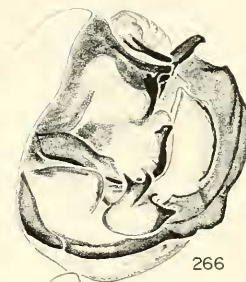
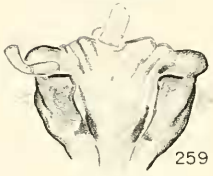
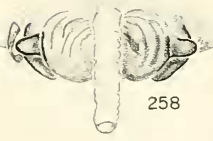
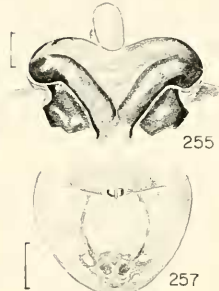
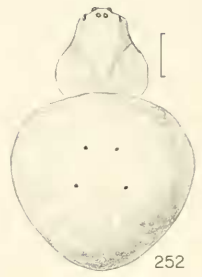
Figures 254–257. *A. zapallar* n. sp., female. 254. Epigynum, ventral. 255. Epigynum, posterior. 256. Dorsal. 257. Abdomen, ventral.

Figures 258–261. *A. huahun* n. sp. 258–260. Female. 258. Epigynum, ventral. 259. Epigynum, posterior. 260. Dorsal. 261. Male palpus.

Figures 262–266. *A. alhue* n. sp. 262–265. Female. 262. Epigynum, ventral. 263. Epigynum, posterior. 264. Dorsal. 265. Abdomen, ventral. 266. Male palpus.

Figures 267–271. *A. titurus* Simon. 267–270. Female. 267. Epigynum, ventral. 268. Epigynum, posterior. 269. Abdomen, dorsal. 270. Abdomen, ventral. 271. Male palpus.

*Scale lines.* 1.0 mm, genitalia 0.1 mm.



1972, ♀ (W. C. Sedgwick, MCZ); Bosque Quintero, 20 Feb. 1973, ♀ (L. Cartagena, MCZ). *Santiago*: Quebrada Córdoba Coast, 15–20 Feb. 1979, 2♀ (L. Peña, AMNH).

*Araneus huahun* new species

Figures 258–261; Map 3

*Holotype*. Female holotype from Huahun, Neuquén, Argentina, 17 Jan. 1985 (E. Maury), in MACN. The specific name is a noun in apposition after the type locality, spelled as above (there are various spellings of the type locality).

*Description*. Female holotype. Carapace yellowish with head dusky. Chelicerae yellowish. Labium, endites dusky. Sternum dark dusky. Coxae yellowish; legs yellowish with indistinct, wide, darker rings. Dorsum of abdomen with transverse dusky and white marks (Fig. 260); venter with a dusky area in middle, framed by a white line on each side and a white spot on each side anterior of spinnerets; spinnerets dusky. Posterior median eyes 1.2 diameters of anterior medians, anterior laterals 1 diameter, posterior laterals 0.8. Anterior median eyes slightly more than 1 diameter apart, 1.5 from laterals. Posterior median eyes 0.7 their diameter apart, slightly more than 2 from laterals. Abdomen subspherical with distinct humps (Fig. 260). Total length 6.5 mm. Carapace 2.5 mm long, 2.1 wide. First femur 2.5 mm, patella and tibia 3.1, metatarsus 1.9, tarsus 0.7. Second patella and tibia 2.5 mm, third 1.5, fourth 2.3.

Male from Santiago Prov., Chile. Color as in female. Posterior median eyes same diameter as anterior medians, anterior laterals 1 diameter, posterior laterals 0.7. Anterior median eyes 1.5 diameters apart, 1.5 from laterals. Posterior median eyes 1.3 diameters apart, 2.5 from laterals. Endite with tooth dorsal in position. First coxa with hook. Second tibia thicker than first, with short anterior macrosetae. Abdomen oval, slightly longer than wide, widest in front. Total length 3.7 mm. Carapace 1.9 mm long, 1.6 wide. First femur 2.2 mm, patella and tibia 2.6, metatarsus 1.6, tarsus 0.5. Second patella and tibia 2.1 mm, third 1.3, fourth 1.7.

*Variation*. Total length of females 4.4 to 6.5 mm, of males 3.2 to 3.8.

*Diagnosis*. Females differ from those of *A. alhue* (Figs. 262, 263) by having a transverse sclerotized fold on each side of the epigynum base in ventral view (Fig. 258) and having the lateral plates in posterior view with a 90° angle toward the median (Fig. 259). Males differ from *A. alhue* (Fig. 266) by having the embolus rounded laterally, the tip pointing toward the cymbium, and the embolus lamella long and the terminal apophysis projecting (Fig. 261).

*Natural History*. Specimens have been collected in montane forest in Talca Province, and in *Nothofagus* forest in Ñuble and Talca.

*Distribution*. Neuquén and Chubut Provinces of Argentina, and Chile (Map 3).

*Paratypes*. ARGENTINA *Neuquén*: S. Martín de los Andes; El Venado (both MACN). *Río Negro*: Bariloche (MACN). *Chubut*: Cholila (MACN). CHILE *Coquimbo*: 3 km E El Tofo; 15 km SW Ovalle; Pta. Teatinos N. de La Serena; Los Vilos (all AMNH). *Aconcagua*: El Injenio, La Ligua (MCZ). *Valparaíso*: Cuesta El Melón (AMNH); Olmué (AMNH); Quillota (AMNH); Viña del Mar (AMNH); La Cruz (MCZ); Playa El Canelillo (MCZ). *Santiago*: Ojesta Barrilyn (MCZ); Tiltil, 800–1300 m; Prique; S Melipilla; Santiago (all AMNH). *Curicó*: E Curicó (AMNH). *Talca*: 70 km E Talca, Alto de Vilches (AMNH). *Ñuble*: rd. to Pemuco; 60 km SE Chillán, 1300 m; Chillán, Las Trancas (all AMNH). *Bío-Bío*: El Abanico (CAS); Trolguaca (IRSNB). *Malleco*: Cord. Chillán Las Cabras (IRSNB); Laguna Malleco (AMNH); Malalcahuello (AMNH); Tolhuaca (AMNH). *Cautín*: Chacano, NW Nueva Imperial (AMNH).

*Araneus alhue* new species

Figures 262–266; Map 3

*Holotype*. Female holotype from Piche, Alhué, Santiago Prov., Chile, 22 Nov. 1959 (L. Peña), in MCZ. The specific name is a noun in apposition after the type locality.

*Description.* Female holotype. Carapace dark brown, with black marks (Fig. 264). Chelicerae orange, proximally black. Labium, endites dark brown. Sternum dark brown. Coxae yellowish; legs orange, ringed blackish-brown. Dorsum of abdomen with white anterior semicircle and posterior median longitudinal light band on black (Fig. 264); venter black bordered on each side by a white line, a reticulated pattern on each side (Fig. 265). Posterior median eyes 1.5 diameters of anterior medians, anterior laterals 1.3 diameters, posterior laterals 1. Anterior median eyes 1.4 diameters apart, 1.3 from laterals. Posterior median eyes their diameter apart, 1.8 from laterals. Abdomen slightly wider than long, with rounded lateral humps (Fig. 264). Total length 4.5 mm. Carapace 1.7 mm long, 1.5 wide. First femur 1.9 mm, patella and tibia 2.3, metatarsus 1.5, tarsus 0.7. Second patella and tibia 1.9 mm, third 1.2, fourth 1.8.

Male. Color as in female. Posterior median eyes 1 diameter of anterior medians, laterals 0.7 diameter. Anterior median eyes 1.2 diameters apart, 1.2 from laterals. Posterior median eyes 1 diameter apart, 2 from laterals. Endites with tooth. First coxa with hook. Second tibia thicker than first. Abdomen oval. Total length 3.5 mm. Carapace 1.8 mm long, 1.4 wide. First femur 2.0 mm, patella and tibia 2.5, metatarsus 1.3, tarsus 0.5. Second patella and tibia 1.9 mm; third 1.1, fourth 1.4.

*Variation.* Total length of females 3.6 to 5.6 mm, of males 3.2 to 3.8.

*Diagnosis.* Females are separated from other Chilean species by the hexagonal posterior median plate of the epigynum (Fig. 263); males by the projecting spur of the terminal apophysis and the laterally rounded embolus (Fig. 266). The median apophysis has a blunt point laterally (Fig. 266).

*Distribution.* Neuquén, Argentina, and Chile (Map 3).

*Records.* ARGENTINA *Neuquén:* Lago Lacar, 750 m (ZMK). CHILE *Coquimbo:* E Illapel (AMNH). *Aconcagua:* 10 km E Zapudo (CAS); Zapallar (CAS); region de

Valparaíso, Petorca (AMNH). *Valparaíso:* Valparaíso (AMNH); nr. El Tabo Quintero (AMNH). *Santiago:* Pirque (AMNH); Cerro San Cristóbal, nr. Santiago City, 500–800 m (AMNH); N of Tiltill, 800–1300 m (AMNH); Las Cañas (AMNH); S Melipilla (AMNH). *Curicó:* Las Tablas, E Curicó (AMNH). *Ñuble:* SE Chillán, 800 m (AMNH); Las Trancas, Chillán (AMNH); 50 km E San Carlos (AMNH); 40 km E San Carlos (AMNH). *Concepción:* Pichinhue Cord. Nahuelbuta (IRSNB); 6 km S San Pedro, 360 m (AMNH). *Bío-Bío:* Calcedonia, E Mulchen, 700–900 m (AMNH); nr. Contulmo (AMNH). *Malleco:* Caracautín (AMNH). *Cautín:* NW Nueva Imperial, W Temuco (AMNH). *Valdivia:* Purulón (AMNH).

### *Araneus titirus* Simon

Figures 267–271; Map 3

*Araneus titirus* Simon, 1896: 67. Two female syntypes from Sierra de Chillán, Chillán, Chile, in MNHN no. 17692, examined. Bonnet, 1955: 613. *Aranea titira*:—Roewer, 1942: 854.

*Description.* Female syntype. Carapace yellow-brown, center with some white pigment, sides brownish. Sternum black. Coxae yellowish white; legs yellow-white with thin line. Dorsum of abdomen spotted, light anteriorly with pairs of indistinct marks posteriorly (Fig. 269); venter black with white patch on each side and two small white spots on each side of spinnerets (Fig. 270). Eyes subequal. Anterior median eyes 1.7 diameters apart, 1.7 from laterals. Posterior median eyes 1.5 their diameter apart, 3 from laterals. Abdomen oval, wider than long, smooth (Fig. 269). Total length 3.6 mm. Carapace 1.5 mm long, 1.3 wide. First femur 1.6 mm, patella and tibia 1.8, metatarsus 1.2, tarsus 0.6. Second patella and tibia 1.5 mm, third 0.9, fourth 1.3.

Male from Chubut Prov., Argentina. Color as in female. Posterior median eyes 0.8 diameter of anterior medians, anterior laterals 0.8 diameter, posterior laterals 0.7. Anterior median eyes 1.3 diameters apart, 1.3 from laterals. Posterior median eyes 1.2 diameters apart, 2.5 from laterals. Endite

with tooth dorsal in position. First coxa with hook. Second tibia thicker than first with some anterior macrosetae. Abdomen oval. Total length 4.6 mm. Carapace 2.1 mm long, 1.8 wide. First femur 2.3 mm, patella and tibia 2.5, metatarsus 1.5, tarsus 0.5. Second patella and tibia 2.0 mm, third 1.2, fourth 1.7.

*Variation.* Total length of females 3.6 to 6.4 mm, of males 3.5 to 4.6. The black venter of the abdomen with contrasting white streaks is barely visible in some specimens.

*Diagnosis.* When present, the white ventral streaks of the abdomen are diagnostic. The median plate of the epigynum in posterior view is longer than that of related species and has an interior depression (Fig. 268). The median apophysis of the male palpus differs from that of other species by being bulky and expanded underneath the neck with the two teeth, and by the terminal apophysis pointing laterally (Fig. 271). The embolus is hidden by two lobes of the distal hematodocha (Fig. 271).

*Distribution.* Neuquén and Río Negro Provinces of Argentina, and Chile (Map 3).

*Records.* ARGENTINA *Neuquén:* Huahun (MACN); Lagunas El Venada (MACN); Lago Guilleá (MACN); Nuhual Huapi (MACN); L. Lacar-Pucará (MACN); Pucará (MACN); Lago Lacar, Pucará, 750 m (ZMK). *Río Negro:* El Bolsón (AMNH); Río Azul (AMNH); Bariloche (ZMK). *Chubut:* Cholila, Lago Lezama (AMNH); Epu-yén (AMNH); Lago Escondido (AMNH). CHILE *Coquimbo:* Cerro Talinay (AMNH), Nague (AMNH). *Aconcagua:* Zapallar (CAS). *Valparaíso:* nr. El Tabo (AMNH); Valparaíso (MCZ). *Santiago:* Malleco (AMNH); Quebrada Córdoba (AMNH). *Talca:* Alto de Vilches Audes (MCZ). *Linares:* Las Cruces Parral

(IRSNB). *Ñuble:* Chillán (AMNH); Los Lleuques (AMNH); Cobquecura (IRSNB); Cord. Chillán, Las Cabras (IRSNB). *Concepción:* Pichinahué, Cord. Nahuelbuta (IRSNB). *Arauco:* Contulmo (MCZ). *Bío-Bío:* Trolguaca (IRSNB). *Malleco:* Las Raíces, 1200 m (AMNH); Curacautín (AMNH); Nahuelbuta Natl. Pk., 1300 m (AMNH); Malalcahuello, Region Araucania (AMNH); *Cautín:* NW Nueva Imperial (AMNH). *Valdivia:* Valdivia (MCZ, AMNH); central coast (AMNH). *Osorno:* Pucatrihue Coast (MCZ); Maullín (MNRJ). *Llanquihue:* Correntoso (MCZ). *Chiloé:* Dalcahue (MCZ). *Aysén:* Region Aysén del General Carlotz Ibanez del Campo Bandurrias (AMNH); Aysén, Coihaique (IRSNB).

#### *Araneus uniformis* (Keyserling) Figures 272–275; Map 3

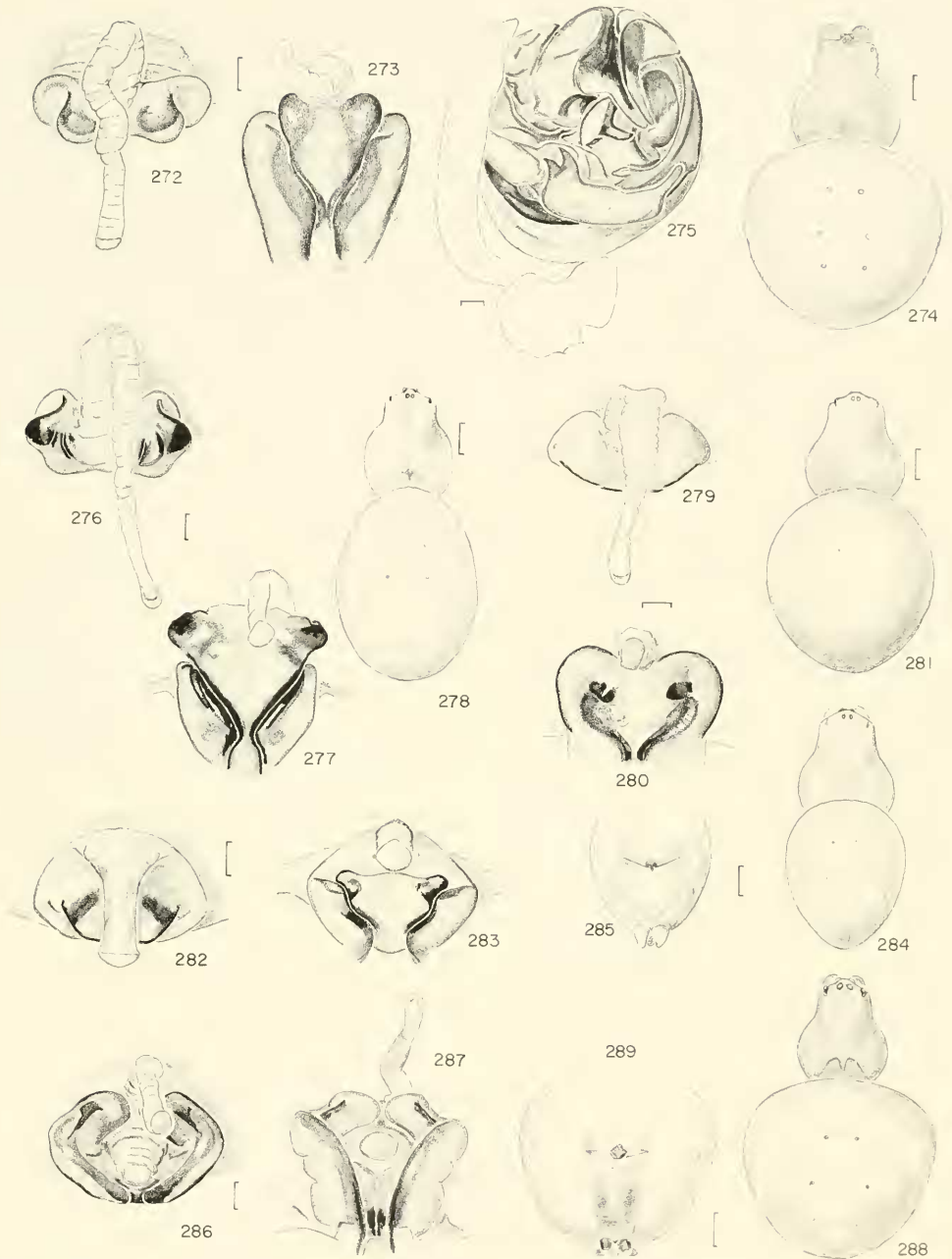
- Epeira uniformis* Keyserling, 1880: 307, pl. 4, fig. 10, ♀. Female holotype from Neu Freiburg [Novo Friburgo, Rio de Janeiro], Brazil, in BMNH, examined. Keyserling, 1892: 160, pl. 8, fig. 118, ♀.
- Epeira lucida* Keyserling, 1884: 650, pl. 21, fig. 2, ♀. Female holotype from Santa Isabela, Rio Grande do Sul, Brazil, in NMI, examined. Keyserling, 1892: 126, pl. 6, fig. 93, ♀. NEW SYNONYMY.
- Araneus candidus* Simon, 1895: 809. Female lectotype, male paralectotype here designated from southern Brazil in MNHN no. 9726, examined. Bonnet, 1955: 451. NEW SYNONYMY.
- Aranea vespae* Strand, 1908: 3. Five early instar syntypes from Joinville, Santa Catarina, Brazil, in SMF, examined. Roewer, 1942: 856. NEW SYNONYMY.
- Aranea candida*:—Roewer, 1942: 838.
- Aranea lucida*:—Roewer, 1942: 846.
- Aranea uniformis*:—Roewer, 1942: 855.
- Araneus candidus*:—Bonnet, 1955: 451.
- Araneus lucidus*:—Bonnet, 1955: 530.
- Araneus uniformis*:—Bonnet, 1955: 626.
- Aranea vespae*:—Bonnet, 1955: 629.

*Notes.* Two females of *Epeira lucida* are in the National Museum of Ireland collection. One is the specimen Keyserling de-

Figures 272–275. *Araneus uniformis* (Keyserling). 272–274. Female. 272. Epigynum, ventral. 273. Epigynum, posterior. 274. Dorsal. 275. Male, left palpus.

Figures 276–278. *A. cuiaba* n. sp., female. 276. Epigynum, ventral. 277. Epigynum, posterior. 278. Dorsal.





Figures 279–281. *A. villa*, n. sp., female. 279. Epigynum, ventral. 280. Epigynum, posterior. 281. Dorsal.

Figures 282–285. *A. concoloratus* (O. P.-Cambridge), female. 282. Epigynum, ventral. 283. Epigynum, posterior. 284. Dorsal. 285. Abdomen, ventral.

Figures 286–289. *A. sicki*, n. sp., female. 286. Epigynum, ventral. 287. Epigynum, posterior. 288. Dorsal. 289. Abdomen, ventral.

Scale lines. 1.0 mm, genitalia 0.1 mm.

scribed; the other is *Araneus workmani*. The one fitting the Keyserling description has been designated the holotype.

The label in the vial of *A. candidus* indicates numerous localities from Rio de Janeiro, Brazil, to Paraguay.

Strand writes that *A. vespae* differs from *A. lucida* by being green, smaller, and having a longer first metatarsus. It is smaller, and has a longer metatarsus because it is an early instar, and is green because it was more recently collected and is in better condition than other specimens of this species examined by Strand.

*Description.* Female from Pinhal, Est. Santa Catarina. Carapace, sternum, legs yellow, abdomen whitish (Fig. 274). Anterior median eyes slightly larger than others, laterals about 0.7 diameter of anterior medians. Anterior median eyes more than 1 diameter apart, posterior medians 1 diameter apart. Tarsi and metatarsi of legs 1 to 3 with prolateral fields of macrosetae. Total length 9.3 mm. Carapace 3.5 mm long, 2.9 wide. First femur 3.6 mm, patella and tibia 5.4, metatarsus 3.7, tarsus 1.3. Second patella and tibia 4.7 mm, third 2.7, fourth 3.7.

Male from Pinhal, Est. Santa Catarina. Coloration as in female. Posterior median eyes 0.7 diameter of anterior medians, anterior laterals 0.6 diameter, posterior laterals 0.5. Anterior medians their diameter apart, 1.8 from laterals. Posterior medians 0.7 their diameter apart, 4.2 from laterals. Endite with tooth. First coxa with hook. Second coxa with a proximal, light-colored, small tubercle. Second tibia thicker than first. Abdomen oval. Total length 6.3 mm. Carapace 3.4 mm long, 2.5 wide. First femur 3.4 mm, patella and tibia 5.2, metatarsus 3.4, tarsus 1.2. Second patella and tibia 4.6 mm, third 2.4, fourth 3.4

*Variation.* Living specimens, both male and female, are green (Kochalka, personal communication). The type of *A. lucidus* is only 6 mm total length, carapace 2.2 long. That of *A. candidus* is 12.7 mm total length, carapace 5.7 long. These are the extremes of the total length of females; total length

of other females in collections 6.3 to 12.0 mm, of males 5.2 to 7.7.

*Diagnosis.* This species and the related *A. concoloratus* and *A. cuiaba* have small eyes. *Araneus uniformis* females are distinguished from those of *concoloratus* (Fig. 282) by the longer scape of the epigynum (Fig. 272) and from *A. cuiaba* (Fig. 277) by having the posterior median plate longer than wide (Fig. 273). Males differ from other known males by having a prong at the lateral end of the median apophysis and by the mushroom-shaped embolus, offset and lying on its side (Fig. 275).

*Distribution.* Southeastern Brazil to Argentina and Bolivia (Map 3).

*Records.* BRAZIL *Espírito Santo:* M. Moscoso, Vitória (MNRJ). *Minas Gerais:* Serra do Caraça (MZSP). *Rio de Janeiro:* Niterói (MNRJ); Poço Grande (MNRJ); Itatiaia (MNRJ); Petrópolis (AMNH). *São Paulo:* Barueri (MZSP); Itu (AMNH); Piraçununga (MZSP); Pôrto Cabral (MZSP); Mogi das Cruzes (MZSP). *Paraná:* Rolândia (AMNH); Rio do Malo (MNRJ). *Santa Catarina:* Blumenau (MZSP); Pinhal, 700 m (AMNH). *Rio Grande do Sul:* Porto Alegre (MNRJ); Santa Rosa (MCZ); Igrejinha (Jaguara) (MZSP); Montenegro (MCN); Canela (MCN); São Valentim (MCN); Capivari, Viamão (MCN); Triunfo (MCN); Quaraí (MCN); Estac. Ecológica de Taim, Rio Grande (MCN). URUGUAY *Tacuarembó:* Arroyo Laureles (MHNM). PARAGUAY *Concepción:* Fonciere (MCZ). *Chaco:* Madrejón (IBNP). BOLIVIA *La Paz:* Coroico, Yungas, 1600 m (IRSNB). ARGENTINA *Misiones:* Eldorado (AMNH); San Antonio (MACN); Pt. Rico (MACN). *Corrientes:* Paso de la Patria (MACN). *Chaco:* Sáenz Peña (MACN). *Catamarca:* Frías (CAS). *Córdoba:* 8 km N Deán Funes (CAS). *Buenos Aires:* Paraná de las Palmas (MEG); La Plata (MNRJ, MLP); Isla Flora, Tigre (MNRJ).

#### *Araneus cuiaba* new species

Figures 276–278; Map 3

*Holotype.* Female holotype from Cuiabá, Mato Grosso, Brazil, Nov. 1963 (M. Alvarenga), in AMNH.

The specific name is a noun in apposition after the type locality.

**Description.** Female. Carapace orange. Chelicerae, labium, endites, and sternum orange. Coxae, legs orange. Dorsum of abdomen lighter orange (Fig. 278); venter with white square between epigynum and spinnerets. Eyes small. Posterior median eyes 0.8 diameter of anterior medians, anterior laterals 0.8 diameter, posterior laterals 0.7. Anterior median eyes 1.5 diameters apart, 2.5 from laterals. Posterior median eyes slightly less than their diameter apart, 3.5 from laterals. Sides and undersides of distal articles, especially of first two pairs of legs, with short macrosetae and setae. Abdomen elongate oval (Fig. 278). Total length 9.5 mm. Carapace 3.8 mm long, 2.8 wide. First femur 3.9 mm, patella and tibia 5.2, metatarsus 3.9, tarsus 1.2. Second patella and tibia 4.7 mm, third 2.6, fourth 4.1.

**Diagnosis.** This species differs from *A. uniformis* (Fig. 273) in that the lobes of the median plate overlap the lateral ones in ventral view (Fig. 276), and the median plate is as wide as long in posterior view (Fig. 277).

**Paratypes.** BRAZIL *Mato Grosso do Sul*: Corumbá, 28, 29 May 1960, 2♀ (B. Malkin, AMNH). ARGENTINA *Formosa*: Pt. Santos [?], ♀ (H. Hepper, MACN).

#### *Araneus villa* new species Figures 279–281; Map 3

**Holotype.** Female holotype and one female paratype from Puente Villa, Yungas, 1200 m, La Paz, Bolivia, 12–20 Dec. 1955 (L. Peña), in IRSNB. The specific name is a noun in apposition after the type locality.

**Description.** Female. Carapace light orange; hardly any black around eyes, except for black pigment behind eye lenses. Chelicerae, labium, endites, sternum light orange. Coxae, legs light orange. Dorsum of abdomen white (Fig. 281); sides and sides of venter with tiny white spots. Eyes small. Posterior median eyes 0.7 diameter of anterior medians, anterior laterals 0.8 diameter, posterior laterals 0.6. Anterior me-

dian eyes 1 diameter apart, 2.5 from laterals. Posterior median eyes their diameter apart, 4.5 from laterals. First and second metatarsi and tarsi curved, with more macrosetae on underside than above. Abdomen subspherical (Fig. 281). Total length 8.7 mm. Carapace 3.5 mm long, 2.8 wide. First femur 3.9 mm, patella and tibia 5.0, metatarsus 3.4, tarsus 1.1. Second patella and tibia 4.4 mm, third 2.7, fourth 3.9.

**Diagnosis.** The hemispherical, entire base of the epigynum in ventral view (Fig. 279) and the small triangular median plate anteriorly fused to the laterals in posterior view (Fig. 280) separate this species from *A. uniformis* (Figs. 272, 273).

#### *Araneus concoloratus* (F. P.-Cambridge) Figures 282–285; Map 3

*Aranea concolorata* F. P.-Cambridge, 1904: 511, pl. 49, fig. 3, ♀. Female holotype from Veragua. [Cord. Veragua, Serrania de Abasará], Panama, in BMNH, examined. Roewer, 1942: 839.

*Araneus concoloratus*:—Bonnet, 1955: 462.

**Description.** Female. Coloration all yellowish white, some black pigment in median eyes, and a white square between epigynum and spinnerets on venter of abdomen (Fig. 285). Eyes small. Posterior median eyes 0.8 diameter of anterior medians, laterals 0.8 diameter. Anterior median eyes 2.5 diameters apart, 3.5 from laterals. Posterior median eyes slightly less than 2 diameters apart, 5.5 from laterals. Abdomen oval, longer than wide, slightly pointed behind. Total length 8.8 mm. Carapace 4.2 mm long, 3.4 wide. First femur 4.8 mm, patella and tibia 5.7, metatarsus 4.5, tarsus 1.6. Second patella and tibia 4.8 mm, third 3.1, fourth 4.3.

**Note.** The specimen was probably all green when collected. No other specimen of this species has been found.

**Diagnosis.** This species differs from the related *A. uniformis* (Figs. 272, 273) and *A. cuiaba* (Figs. 276, 277) by having a shorter scape with parallel sides in the epigynum (Fig. 282) and having the base of the scape overhanging the triangular

posterior median plate in posterior view (Fig. 283).

*Araneus sicki* new species  
Figures 286–289; Map 3

*Holotype.* Female holotype from Serra dos Órgãos, 1000–1800 m, forest, Est. Rio de Janeiro, Brazil, 19 Apr. 1965 (H. Levi), in MZSP, ex MCZ. The species is named after the collector of a paratype, the ornithologist Helmut Sick.

*Description.* Female paratype. Carapace, chelicerae, labium, endites, and sternum orange. Coxae orange, legs orange with a dark ring on distal half of fourth tibiae. Dorsum of abdomen with white patches (Fig. 288); venter dusky between epigynum and spinnerets (Fig. 289). Posterior median eyes same diameter as anterior medians, laterals 0.8 diameter. Anterior median eyes a little more than 1 diameter apart, 1.4 from laterals. Posterior median eyes 0.7 diameter apart, slightly less than 2 from laterals. Abdomen sub-spherical (Fig. 288). Total length 8.3 mm. Carapace 3.1 mm long, 2.7 wide. First femur 3.7 mm, patella and tibia 4.5, metatarsus 2.7, tarsus 1.0. Second patella and tibia 3.7 mm, third 2.1, fourth 2.9.

*Diagnosis.* The species differs from all other *Araneus* by having a short wrinkled posterior projection in the epigynum originating from the base of the scape (Figs. 286, 287).

*Paratype.* BRAZIL Est. Rio de Janeiro: Teresópolis, 1600–1800 m, 16 Mar. 1946 (H. Sick, AMNH).

*Araneus tijuca* new species  
Figures 290–294; Map 3

*Holotype.* Female holotype, male paratype from Barra da Tijuca, Est. Rio de Janeiro, Brazil, sand dunes,

shore vegetation, 16 Apr. 1965 (H. Levi), in MZSP, ex MCZ. The specific name is a noun in apposition after the type locality.

*Description.* Female. Carapace, sternum, and legs yellow. Dorsum of abdomen white with dark cardiac mark and black marks above spinnerets (Fig. 292); sides black; venter with black square, white mark on each side of square and white longitudinal line on each side of white mark (Fig. 293). Posterior median eyes 0.9 diameter of anterior medians, lateral eyes 0.7 diameter. Anterior medians their diameter apart, 1.2 from laterals. Posterior medians 0.5 their diameter apart, a little over 2 from laterals. Abdomen oval. Total length 6.3 mm. Carapace 3.2 mm long, 2.3 wide. First femur 3.4 mm, patella and tibia 3.6, metatarsus 2.7, tarsus 1.1. Second patella and tibia 3.2 mm, third 1.9, fourth 2.8.

Male. Color as in female, but no dark marks on dorsum of abdomen. Posterior median eyes 0.7 diameter of anterior medians, lateral eyes 0.6 diameter. Anterior medians 0.8 their diameter apart, 0.8 from laterals. Posterior medians 0.6 their diameter apart, a little less than 2 from laterals. Endite with tooth. Coxa with hook; legs with many dark macrosetae. Second tibia swollen, with four macrosetae in a ventral line, the distal one shortest, proximal longest. Total length 3.9 mm. Carapace 2.2 mm long, 1.7 wide. First femur 2.2 mm, patella and tibia 2.6, metatarsus 1.9, tarsus 0.9. Second patella and tibia 2.6 mm, third 1.4, fourth 2.1.

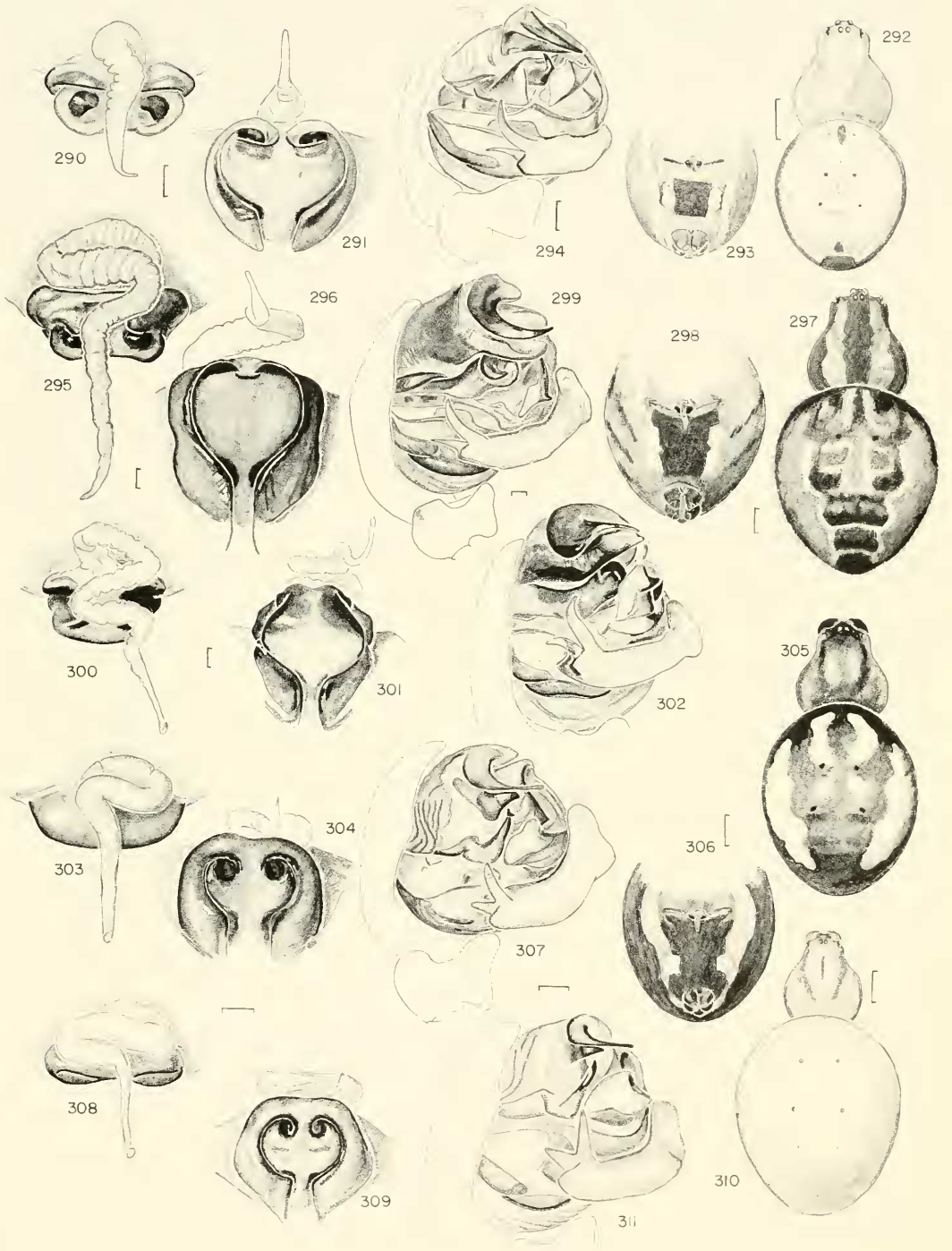
*Note.* The photograph of a living female shows the carapace and legs to be dark green, the abdomen green with black areas bordered by white.

Figures 290–294. *Araneus tijuca* n. sp. 290–293. Female. 290. Epigynum, ventral. 291. Epigynum, posterior. 292. Dorsal. 293. Abdomen, ventral. 294. Male, left palpus.

Figures 295–302. *A. venatrix* (C. L. Koch). 295–298. Female. 295, 300. Epigynum, ventral. 296, 301. Epigynum, posterior. 297. Dorsal. 298. Abdomen, ventral. 299, 302. Male palpus. 295–299 (Panama). 300–302 (São Paulo, Brazil).

Figures 303–311. *A. guttatus* (Keyserling). 303–306, 308–310. Female. 303, 308. Epigynum, ventral. 304, 309. Epigynum, posterior. 305, 310. Dorsal. 306. Abdomen, ventral. 307, 311. Male palpus. 303–307 (Panama). 308–310 (São Paulo, Brazil). 311 (Mato Grosso, Brazil).

Scale lines 1.0 mm, genitalia 0.1 mm.



*Variation.* Total length of females 6.3 to 8.0 mm, of males 3.9 to 5.6.

*Diagnosis.* Females are separated from those of the similar *A. guttatus* (Fig. 300) by the shorter scape of the epigynum (Fig. 290) and by the straight ventral edge of the posterior median plate (Fig. 291). In the male, the median apophysis laterally narrows and the embolus is twisted twice (Fig. 294), unlike in that of *A. guttatus* (Fig. 307).

*Natural History.* In Rio de Janeiro in the botanical garden at the edge of the forest, a web one meter above ground with the retreat in a folded green leaf, partly shaded.

*Distribution.* From Espírito Santo to Rio de Janeiro States, Brazil (Map 3).

*Paratypes.* BRAZIL *Espírito Santo*: M. Moscoso, Vitória, Oct. 1981, ♂ (A. Cerrutti, MNRJ). *Rio de Janeiro*: Itabapoana, ♀ (M. Rosa, MNRJ); Jardim Botânico, Rio de Janeiro, 29–31 Mar. 1983, 2♀ (H. Levi, MCZ); 2 Apr. 1987, 4♀ (H., L. Levi, MCZ).

*Araneus venatrix* (C. L. Koch)  
Plate 2; Figures 295–302; Map 4

*Miranda venatrix* C. L. Koch, 1839: 56, pl. 373, ♀. Specimens from Brazil, lost.

*Epeira analis* C. L. Koch, 1845: 75, pl. 891, ♀. Female from Brazil, lost. First synonymized by Keyserling, 1892.

*Epeira peruviana* Taczanowski, 1878: 150, pl. 1, fig. 5, ♀. Female syntypes from Amable María [Dpto. Junín], Peru, in PAN, examined. NEW SYNONYMY.

*Epeira venatrix*:—Keyserling, 1892: 201, pl. 9, fig. 149, ♀, ♂.

*Araneus venatrix*:—Petrunkevitch, 1911: 323.

*Araneus sinuoscapus* Chamberlin and Ivie, 1936: 49, pl. 14, fig. 123, ♀. Female holotype from Barro Colorado Island, Panama, in AMNH, examined. NEW SYNONYMY.

*Aranea peruviana*:—Roewer, 1942: 850.

*Aranea venatrix*:—Roewer, 1942: 855.

*Aranea sinuoscapa*:—Roewer, 1942: 853.

*Araneus venator*:—Bonnet, 1955: 627.

*Note.* Bonnet (1955) writes that in the combination with *Araneus* the specific name has to be declined from *venatrix* to *venator*. *Venator* means hunter, *venatrix* means huntress. According to H. D. Cam-

eron (personal communication), *venatrix* and *venator* are both nouns not adjectives, and therefore nouns in apposition in the meaning of the *International Code of Zoological Nomenclature* [ICZN 1985, Art. 11 (h, i, 2)]. According to Article 31(b) of the Code, "A species-group name, if it is or ends in a Latin adjective or participle in the nominative singular or is latinized, must agree in gender with the generic name with which it is at any time combined and its termination must be changed according to Latin inflection." H. D. Cameron believes it would be correct if we follow Bonnet. However, while *Araneus venator* is grammatically correct, the ICZN 1985 Art. 31 (b, i) states that as a noun in apposition to the name of its genus, its spelling is not changed if it is combined with a generic name of a different gender. For this reason, I will continue to use the "grammatically incorrect" *Araneus venatrix*.

*Description.* Female from Panama. Carapace yellow with a median dark band, sides of thorax dark (Fig. 297). Sternum brown. Coxae yellow; legs contrastingly ringed yellow and brown. Dorsum of abdomen with folium consisting of dark bars, shoulders black anteriorly (Fig. 297); sides with coalescent dark spots; venter yellow-brown with black patch between epigynum and spinnerets (Fig. 298). Posterior median eyes 0.8 diameter of anterior medians, lateral eyes 0.7 diameter. Anterior median eyes a little less than their diameter apart, a little less than 2 from laterals. Posterior median eyes 0.6 diameter apart, a little less than 3 from laterals. Abdomen oval (Fig. 297). Total length 12 mm. Carapace 5.0 mm long, 4.3 wide. First femur 5.9 mm, patella and tibia 7.3, metatarsus 5.7, tarsus 1.8. Second patella and tibia 6.5 mm, third 3.9, fourth 6.1.

Male from Panama. Carapace orange, without longitudinal bands. Sternum and legs orange, legs not ringed. Dorsum of abdomen orange-white without pattern, posterior tip black. Sides with black streaks; venter with black square, and white spot on each side of square. Posterior median

eyes 0.7 diameter of anterior medians, lateral eyes 0.6 diameter. Anterior medians a little less than their diameter apart, their diameter from laterals. Posterior median eyes 0.7 diameter apart, a little more than 2 from laterals. Endite with tooth. First coxa with hook. Second tibia swollen, with macrosetae. Total length 8.6 mm. Carapace 4.7 mm long, 3.8 wide. First femur 5.0 mm, patella and tibia 6.5, metatarsus 4.5, tarsus 1.3. Second patella and tibia 6.2 mm, third 3.4, fourth 5.2.

*Note.* The photograph of a living female from Brazil (Plate 2) shows the abdomen to have white and black marks with red and brown spots. A male from Panama has the first right leg regenerated.

*Variation.* Total length of females 8.0 to 16.7 mm, of males 6.1 to 8.1. Figures 295–299 were made from a specimen from Panama, 300 and 301 from São Paulo, 302 from Rio Grande do Sul.

*Diagnosis.* Living specimens have an oval abdomen with distinct transverse bars on the posterior. The female has a coiled scape as does *A. guttatus* (Fig. 303), but the anterior edge of the median plate differs in posterior view (Figs. 296, 301). The male has the median apophysis laterally expanded, as does *A. guttatus* (Fig. 307), but differs by the coiled tip of the embolus seen below the subterminal apophysis (Figs. 299, 302).

*Natural History.* The large web is often found near water. Like other large *Araneus* species, the female sits in a retreat.

*Distribution.* From Panama, Trinidad to Rio Grande do Sul, Brazil, and Paraguay (Map 4).

*Records.* PANAMA *Panamá*: Barro Colorado Island (MCZ); Summit (MCZ); Madden Dam (MCZ); Forest Reserve (MCZ); Cerro Galero, Arraiján (MCZ). TRINIDAD Port of Spain (MCZ); Navy Base (AMNH); Sangre Grande (AMNH); Maracas Valley (AMNH); Arima Valley (AMNH); Ft. George Hill (AMNH). VENEZUELA *Amazonas*: Cerro de la Neblina, base camp, 140 m (USNM). GUYANA *Bartica Distr.*: Kartabo (AMNH). SURI-

NAM *Brokopondo*: Brownsberg (MCZ). *Saramacca*: Voltzberg-Raleighvallen Reserve (MCZ). FRENCH GUIANA nr. Cayenne (MCZ). COLOMBIA *Meta*: Puerto Lleras [33°16'N, 73°23'W] (MCZ); 15 km SW Puerto López, 200 m (MCZ). *Caquetá*: Río Orteguaiza (AMNH). ECUADOR *Napo*: Res. Faunística Cuyobeno (MCZ, MECN). PERU *Loreto*: Iquitos (MCZ). *Amazonas*: Alto Río Comaina, 850–1150 m (MHNSM). *San Martín*: 20 km NE Moyobamba (AMNH). *Ucayali*: Concha Huaya, Río Ucayali [?] (BMNH). BRAZIL *Pará*: Óbidos (MZSP). *Roraima*: Rio Branco, Serra Grande (NHRM). *Amazonas*: Maués (INPA); Rio Negro, Umarituba (NHRM); Rio Autás, Santa Amélia [Autás Mirim] (NHRM). *Rondônia*: Abunã (MCZ). *Bahia*: Uruçuca (MCN). *Espírito Santo*: Santa Teresa (AMNH); Morro Moscoso, Vitória (MCN, MNKJ). *Rio de Janeiro*: Nova Friburgo (MNRJ); Rio de Janeiro (MNRJ, MCZ, AMNH); Teresópolis (AMNH); Parque Nac. Tijuca (MCZ). *São Paulo*: Bornerí (MZSP); Bosque Sander (MZSP); São Roque (MZSP); Barueri (MZSP); São Paulo (MZSP, MCZ, AMNH); Diadema (MZSP); São Bernardo, Estr. do Mar (MZSP, MCZ); Nova Europa (MZSP); Cocaia (MZSP); Boracéia (MZSP); Salesópolis (MZSP); Itu (AMNH). *Paraná*: Terra Boa, Almirante Tamandaré (MCN). *Santa Catarina*: Pinhal (AMNH). *Rio Grande do Sul*: Porto Alegre (MCN); Aguas Belas Viãmao (MCN); Parque Est. do Turvo (MCN); Caxias do Sul (MCN); Pelotas (MCZ). PARAGUAY *Concepción*: Apa (AMNH). *Paraguarí*: Ybycuí Natl. Pk. (MCZ, IBNP). BOLIVIA *Beni*: Chacobo Indian Village, Río Benicito (AMNH); Cavinás (USNM). ARGENTINA *Misiones*: Parque Nac. Iguazu (MEG, CAS).

### *Araneus guttatus* (Keyserling)

Plate 2; Figures 303–315; Map 4

*Epeira guttata* Keyserling, 1865: 823, pl. 18, figs. 17, 18, ♀. Female holotype without epigynum from New Granada [Spanish colony of Panama, Colombia], in BMNH, examined.

*Epeira similis* Taczanowski, 1872: 130. Female lectotype here designated from Cayenne, French Guiana in PAN, examined. Name preoccupied by Blackwall, 1844. NEW SYNONYMY.

*Aranea glabrata* F. P.-Cambridge, 1904: 512, pl. 49, fig. 6, ♀. Female holotype from Bugaba, Panama, in BMNH, lost. Roewer, 1942: 843. NEW SYNONYMY.

*Aranea guttata*:—Roewer, 1942: 844.

*Aranea similella* Roewer, 1942: 852. New name for *E. similis* Taczanowski. NEW SYNONYMY.

*Neosconella bipunctata* Mello-Leitão, 1948: 170, fig. 12, ♀. Female holotype from Kutuabatu Creek [?Kutuau Creek], British Guiana, in BMNH, examined. NEW SYNONYMY.

*Araneus guttatus*:—Bonnet, 1955: 513.

*Araneus leitaoi* Brignoli, 1983: 263. New name for *N. bipunctata*, which is preoccupied in the combination *Araneus bipunctatus* Thorell, 1898. NEW SYNONYMY.

*Note.* The holotype of *A. guttatus* has lost its epigynum; however, this structure was illustrated by Keyserling. Keyserling's illustration and the markings on the holotype leave no doubt about the identity of this common, widespread species.

*Description.* Female from Panama. Carapace marbled dark brown on yellow, sternum dark brown. Coxae yellow; legs yellow ringed brown to black, distal half black. Dorsum of abdomen with folium (Fig. 305); venter black with two white spots (Fig. 306). Carapace glabrous. Secondary eyes 0.7 diameter of anterior median eyes. Anterior median eyes slightly more than their diameter apart, 1.5 from laterals. Posterior median eyes a little less than their diameter apart, 2.5 from laterals. Abdomen oval, with few hairs. Total length 8.7 mm. Carapace 3.8 mm long, 2.9 wide. First femur 3.2 mm, patella and tibia 4.0, metatarsus 2.9, tarsus 1.2. Second patella and tibia 3.7 mm, third 2.3, fourth 3.2.

Male from Panama. Color as in female. Thoracic depression present but indistinct. Secondary eyes 0.7 diameter of anterior median eyes. Anterior median eyes slightly less than their diameter apart, 0.8 from laterals. Posterior median eyes 0.7 diameter apart, 2 from laterals. Endite with tooth. First coxa with hook. Second tibia

thicker than first. Abdomen oval. Total length 4.8 mm. Carapace 2.7 mm long, 2.1 wide. First femur 2.9 mm, patella and tibia 3.7, metatarsus 2.7, tarsus 1.1. Second patella and tibia 3.1 mm, third 1.7, fourth 2.5.

*Variation.* A photograph of a female from Panama (Plate 2) shows the abdomen white with a yellowish green cast and black marks; that of a Colombian specimen is green. Kochalka reports (personal communication) specimens from Paraguay with a brilliant green and black abdomen; the carapace may be yellow-green, the legs orange.

Specimens in alcohol from Brazil are pale dorsally on the abdomen (Fig. 310). Also the ventral white spots are more anterior on the middle of the sides of the black patch. The genitalia (Figs. 308, 309 from São Paulo, 311 from Mato Grosso) are similar to those of specimens from Panama (Figs. 303, 304, 307).

Figures 312–315 were made from a specimen from Huachipa, Peru (CAS), first thought distinct. Another came from Alto Solimões, Brazil (MCN). The type of *Epeira similis* from Cayenne has a median plate of the same shape. A male, if collected with such females, may have characters that tell whether the specimens belong to a distinct species. Total length of females 5.2 to 13.5 mm, of males 3.8 to 6.5. The largest individuals came from Mato Grosso, Brazil.

*Diagnosis.* Females differ from *A. ventrix* (Figs. 295, 296) and *A. tijuca* (Figs. 290, 291) by the ventral border of the median plate of the epigynum, which in *A. guttatus* curls toward the median, forming two dark circles (Figs. 304, 309, 313); males differ by the cone-shaped embolus (Figs. 307, 311).

*Natural History.* In Panama specimens have been collected from gardens and a forest, females in a retreat in a curled leaf. In Paraguay, where it is found in an undisturbed low forest, the female builds only a flimsy retreat in vegetation (Kochalka, personal communication). Most collecting localities are at low elevations.



*Distribution.* From Costa Rica to Río Negro, Argentina (Map 4).

*Records.* COSTA RICA *San José:* San Isidro del General, 700–800 m (AMNH). PANAMA *Veraguas:* Santiago (MIUP); El Salto, San Francisco de la Montaña (MIUP). *Colón:* Ft. Davis (MCZ). *Panamá:* very common (MCZ, AMNH, MIUP). *Darién:* Villa Darién [?] (MIUP). VENEZUELA *Distríto Federal:* Caracas (USNM). GUYANA *Kartabo* (AMNH). COLOMBIA *Magdalena:* Ciénaga (MCZ); San Pedro, 1200 m (JAK). *Cesar:* Finca San José, 8 km SE Socorpa Mission, Sierra de Perijá, 1450–1500 m (AMNH). *Córdoba:* Ayapel nr. Ciénaga “La Guajade” (MHNMC). *Antioquia:* Turbo, oil palm (MCZ); Mutatá (MCZ). *Santander:* Río Suárez, 800–1000 m (AMNH). *Meta:* ca. 15 km SW Puerto López (MCZ). *Valle:* 20 km E, 28 km E Buenaventura, both (MCZ); Sevilla (AMNH). *Caquetá:* Río Ortegua (AMNH). *Putumayo:* Buena Vista (MCZ). *Amazonas:* Araracuara, 270 m (CV). ECUADOR *Napo:* Coca (MCZ); Cuyabeno, Tarapoa (MCZ, MECN). PERU *Loreto:* Iquitos (MCZ). *Amazonas:* Alto Río Comaina, 850–1150 m (MHNSM). *Ucayali:* Pucallpa (MHNSM, AMNH); Ucayali Parque Nac. von Humboldt (MHNSM). *Huánuco:* La Molina, SW Pto. Inca, 270 m (MHNSM). *Pasco:* Huancabamba (MHNSM). *Madre de Dios:* Tambopata Res., 290 m (MCZ, MNHSM); Atalaya (MHNSM). BRAZIL *Amazonas:* Manaus, Reserva Duche (MEG). *Rondonia:* Abunã (MCZ). *Goiás:* San Francisco Jara (MZSP). *Mato Grosso:* Lagoa Ipari, Parque Nac. de Xingu (MZSP); Barra do Tapirapé (AMNH); Confl. Araguaia e Tapirapé (MZSP). *Minas Gerais:* Lagõa Santa (MZSP). *Rio de Janeiro:* Rio de Janeiro (ZMK). *São Paulo:* Diadema (MZSP); Jundiá (MCZ, MNRJ, MZSP); Cocaia (MZSP); Barueri (MZSP). *Paraná:* Rolândia (MZSP). *Rio Grande do Sul:* Santa Rosa (AMNH); Santa Maria (MCN); Garruchos, São Borja (MCN). PARAGUAY *Chaco:* Transchaco km 189, km 20 (IRSNB); Parque Nac. Defensores del Chaco: Madrejón (IBNP).

*Concepción:* Apa (AMNH); Fonciere (MCZ). *Alto Paraná:* Itaho Reserve (IRSNB); km 12 de Stroessner (IBNP); Taquararapa (AMNH). *Central:* San Lorenzo (IBNP). *Paraguarí:* Sapucay (MACN); Ybycuí (IBNP); Ybycuí Natl. Pk. (MCZ). *Itapúa:* Antidia Matiauda, 20 km NE Puerto Capitán Mesa (MCZ). *Ñembucú:* Monte Rita (ZMK). ARGENTINA *Misiones:* Parque Nac. Iguazu (MEG); Candelaria (MACN); R. Rico (MACN); Montecarlo (AMNH). *Río Negro:* El Bolsón (AMNH).

### *Araneus abeicus* new species Figures 316–320; Map 3

*Holotype.* Female holotype, two female and one male paratypes from Boracéia, Est. São Paulo, Brazil, 22–23 Feb. 1961 (P. Biasi), in MZSP no. 1228. The specific name is an arbitrary combination of letters.

*Description.* Female holotype. Carapace light orange, head brown with V-shaped white pigment mark. Chelicerae orange. Labium, endites brown. Sternum orange with a median white pigment mark, border darker. Coxae orange; legs orange with brown rings. Dorsum of abdomen white with black marks (Fig. 318); venter with two white bands, black between (Fig. 319). Posterior median eyes same diameter as anterior medians, anterior laterals 1 diameter, posterior laterals 0.7. Anterior median eyes their diameter apart, their diameter from laterals. Posterior median eyes their diameter apart, 1.8 from laterals. Abdomen slightly longer than wide with a pair of humps (Fig. 318). Total length 4.2 mm. Carapace 2.0 mm long, 1.5 wide. First femur 1.9 mm, patella and tibia 2.4, metatarsus 1.5, tarsus 0.8. Second patella and tibia 1.9 mm, third 1.2, fourth 1.9.

Male. Color as in female. Posterior median eyes 0.7 diameter of anterior medians, anterior laterals 0.5 diameter, posterior laterals 0.6. Anterior median eyes 0.8 diameter apart, 0.7 from laterals. Posterior median eyes their diameter apart, 1.5 from laterals. Endite with tooth. First coxa with small hook. Second tibia thicker than first,

with some macrosetae. Abdomen oval, humps less distinct than those of female. Total length 3.6 mm. Carapace 1.7 mm long, 1.5 wide. First femur 1.7 mm, patella and tibia 2.4, metatarsus 1.5, tarsus 0.7. Second patella and tibia 1.8 mm, third 1.2, fourth 1.6.

*Diagnosis.* *Araneus abeicus* females differ from those of *A. iguacu* (Figs. 321, 322) and *A. lenkoi* (Figs. 326, 327), in that the epigynum has two bulges on the posterior margin, one on each side of the scape (Fig. 316). Lateral and median plates are fused in posterior view (Fig. 317). The median apophysis is small and has three teeth (Fig. 320), unlike that of *A. iguacu* (Fig. 325), and the embolus appears to be an enormous structure perhaps derived from the lamella or the base of the embolus, a wrapper enclosing a filament (Fig. 320).

*Paratypes.* One ♀ from type locality, 28 Feb. 1967 (P. Biasi, MZSP 6117).

#### *Araneus iguacu* new species

Plate 2; Figures 321–325; Map 3

*Holotype.* Female holotype, male and two immature paratypes from near Saltos do Iguacu, Est. Paraná, Brazil, 24 Mar. 1985 (H., L. Levi), in MZSP. The specific name is a noun in apposition after the type locality.

*Description.* Female holotype. Carapace light orange with paired dusky marks and a white pigment patch (Fig. 323). Chelicerae, labium, endites orange. Sternum light orange, sides dusky, with white pigment spot. Coxae light orange; legs light

orange with indistinct dusky rings. Dorsum of abdomen with dusky pattern (Fig. 323); venter with four white marks and white spots (Fig. 324). Posterior median eyes 0.8 diameter of anterior medians, anterior laterals 0.7 diameter, posterior laterals 0.8. Anterior median eyes slightly more than their diameter apart, the same from laterals. Posterior median eyes 0.6 diameter apart, slightly less than 2 from laterals. Abdomen subspherical with a pair of dorsal humps (Fig. 323). Total length 4.5 mm. Carapace 2.0 mm long, 1.6 wide. First femur 1.8 mm, patella and tibia 2.3, metatarsus 1.6, tarsus 0.6. Second patella and tibia 1.9 mm, third 1.2, fourth 1.8.

Male paratype. Color as in female except abdomen lacks dusky marks. Posterior median eyes 0.7 diameter of anterior medians, anterior laterals 0.4 diameter, posterior laterals 0.5. Anterior median eyes 0.7 diameter apart, 0.7 from laterals. Posterior median eyes 0.7 diameter apart, 2 from laterals. Endite with tooth. First coxa with hook. Second tibia thicker than first with several macrosetae. Abdomen longer than wide with two humps. Total length 2.9 mm. Carapace 1.4 mm long, 1.3 wide. First femur 1.7 mm, patella and tibia 2.1, metatarsus 1.4, tarsus 0.5. Second patella and tibia 1.6 mm, third 0.9, fourth 1.3.

*Note.* A photograph (Plate 2) shows the live female to be bright green with black and white marks.

*Diagnosis.* All females of this species examined had a wide scar of a scape torn

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Figures 312–315. *Araneus guttatus* (Keyserling), female (Huanuco, Peru). 312. Epigynum, ventral. 313. Epigynum, posterior. 314. Dorsal. 315. Abdomen, ventral.

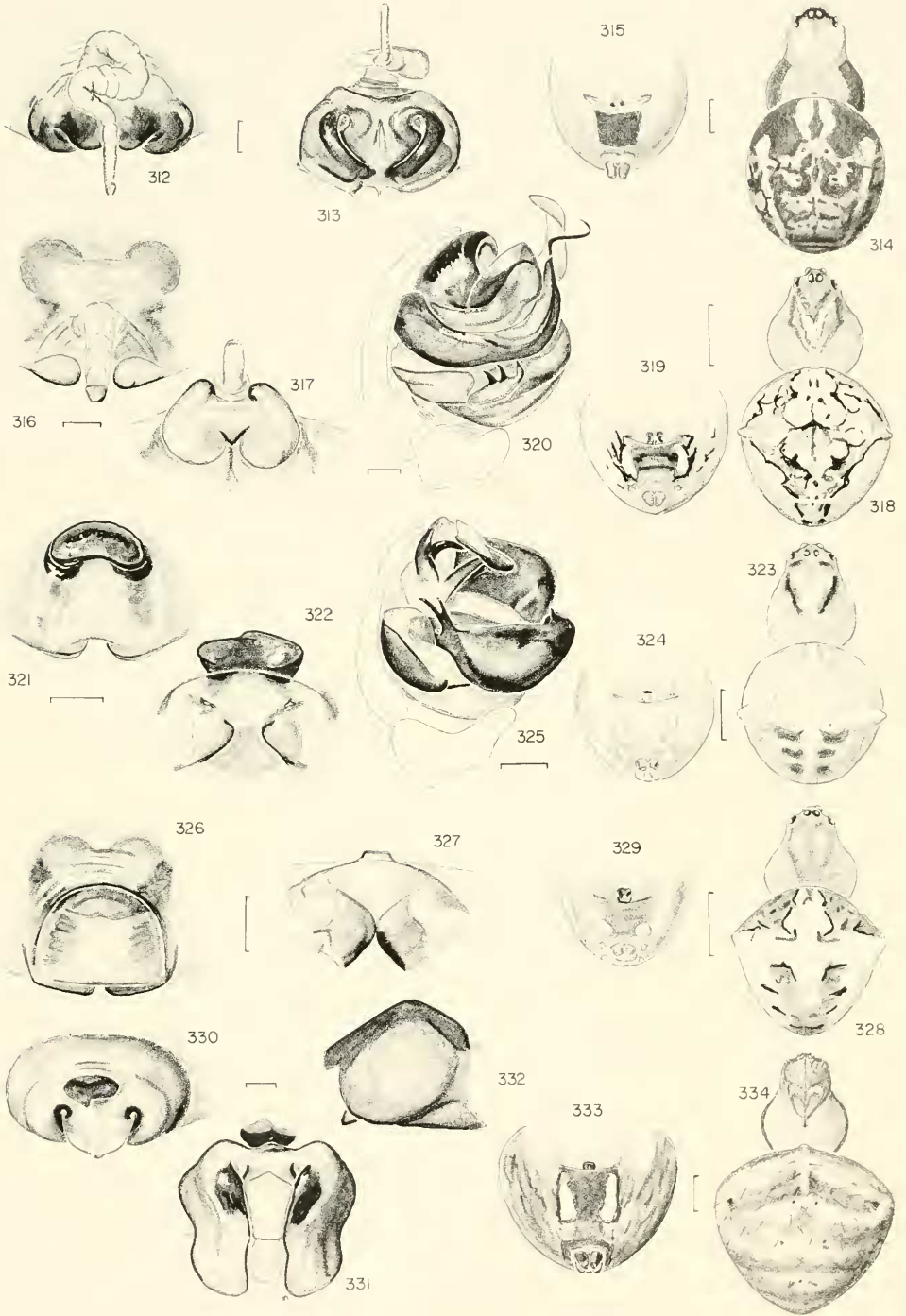
Figures 316–320. *A. abeicus* n. sp. 316–319. Female. 316. Epigynum, ventral. 317. Epigynum, posterior. 318. Dorsal. 319. Abdomen, ventral. 320. Male, left palpus.

Figures 321–325. *A. iguacu* n. sp. 321–324. Female. 321. Epigynum, ventral. 322. Epigynum, posterior. 323. Dorsal. 324. Abdomen, ventral. 325. Male palpus.

Figures 326–329. *A. lenkoi* n. sp., female. 326. Epigynum, ventral. 327. Epigynum, posterior. 328. Dorsal. 329. Abdomen, ventral.

Figures 330–334. *A. chingaza* n. sp., female. 330. Epigynum, ventral. 331. Epigynum, posterior. 332. Epigynum, lateral. 333. Dorsal. 334. Abdomen, ventral.

*Scale lines.* 1.0 mm, genitalia 0.1 mm.



off (Fig. 321). The epigynum differs from that of *A. lenkoi* (Figs. 326, 327) by having a central depression posterior to the scar of a wide scape (Fig. 321). The male has a large semicircular median apophysis with two fine hooks mesally near its base (Fig. 325).

*Natural History.* The web, about 12 cm in horizontal diameter (Plate 2), is made on overhanging cliffs with the retreat above in a crevice. The bottom of the orb is farther from the cliff than the top. It may lack a signal line. Some other webs have an open sector with a signal line, similar to a *Zygiella* web.

*Paratypes.* BRAZIL *Rio de Janeiro:* Parque Nacional Tijuca, Alto de Boa Vista, 1 Apr. 1987, 6♀ (H., L. Levi, MCZ, MNRJ). *Paraná:* nr. Saltos do Iguaçu, 22 Mar. 1985, ♀ (H., L. Levi, MCZ); 23 Mar. 1985, ♀, ♂ (H., L. Levi, MCN). ARGENTINA *Misiones:* Cataratas de Iguazú, Sept. 1963, ♀ (M. E. Galiano, MEG).

#### *Araneus lenkoi* new species Figures 326–329; Map 3

*Holotype.* Female holotype from Boracéia, Est. São Paulo, Brazil, 1 Feb. 1961 (K. Lenko), in MZSP no. E 3373. The species is named after the collector.

*Description.* Female. Carapace orange with dusky mark on head narrowing posteriorly. Chelicerae, labium, endites, sternum orange. Coxae orange; legs light orange indistinctly ringed darker. Dorsum of abdomen with white and black pattern (Fig. 328); venter dusky with a pair of white spots (Fig. 329). Posterior median eyes 1.2 diameters of anterior medians, laterals 1 diameter. Anterior median eyes 1 diameter apart, slightly more than 1 from laterals. Posterior median eyes slightly less than their diameter apart, 1.8 from laterals. Abdomen longer than wide with two humps (Fig. 328). Total length 3.5 mm. Carapace 1.7 mm long, 1.4 wide. First femur 1.7 mm, patella and tibia 2.1, metatarsus 1.2, tarsus 0.6. Second patella and tibia 1.7 mm, third 1.0, fourth 1.6.

*Note.* The right first leg of the holotype is regenerated and shorter than the left

one. The epigynum has a thin, transparent scape with parallel sides within a semicircular depression; the scape does not extend beyond the genital groove. It broke and was lost when cleaning the epigynum with a brush before illustrating.

*Diagnosis.* This species is similar to *A. iguacu* (Figs. 321, 322) but differs by having a narrow scape with parallel sides and by having paired dark marks anterior to the semicircular depression (Fig. 326).

#### *Araneus chingaza* new species Figures 330–334; Map 3

*Holotype.* Female from Paramo de Chingaza, 3000 m, Dpto. Cundinamarca, Colombia [4°31'N, 73°45'W], between rocks, 19 Oct. 1986 (C. Valde-rama A.) in MCZ. The specific name is a noun in apposition after the type locality.

*Description.* Female. Carapace yellowish, head with dusky marks and white and black setae, rim of thorax black. Chelicerae proximally light, dark brown distally. Labium, endites dark brown. Sternum dark brown, lighter in middle. Coxae yellowish with dark patches. Legs with irregular incomplete dark rings on yellowish. Dorsum of abdomen with indistinct transverse brown bands, small brown spots and some white pigment (Fig. 333); venter black with a white line on each side, streaks on the sides (Fig. 334). Secondary eyes 0.8 diameter of anterior medians. Anterior median eyes 1 diameter apart, 1.6 from laterals. Posterior median eyes 1.2 diameters apart, 2.5 from laterals. Abdomen as wide as long, with humps. Total length 8.2 mm. Carapace 3.4 mm long, 2.6 wide. First femur 3.2 mm, patella and tibia 4.0, metatarsus 2.7, tarsus 1.1. Second patella and tibia 3.7 mm, third 2.2, fourth 3.2.

*Diagnosis.* The male of this species is unknown; the female has the scape of the epigynum torn, making it difficult to relate this species to others. However, the small pentagonal median plate in posterior view (Fig. 331) and the openings as seen in ventral view (Fig. 330) distinguish this species from others.

*Araneus selva* new species

## Figures 335–338; Map 5

*Holotype.* Female from Finca La Selva, near Puerto Viejo, Heredia Prov., Costa Rica, 50 m, Jan. 1978 (W. Eberhard no. 1262), in MCZ. The specific name is a noun in apposition after the type locality.

*Description.* Female holotype. Carapace light yellowish, no dark pigment around eyes. Sternum, legs, light yellowish. Dorsum of abdomen white; venter white, no pigment around epigynum or around spinnerets (Fig. 337). Eyes small. Posterior median eyes same diameter as anterior medians, lateral eyes 0.9 diameter. Anterior medians their diameter apart, 1.2 from laterals. Posterior medians 0.5 diameter apart, 2 from laterals. Abdomen wider than long (Fig. 337). Total length 3.3 mm. Carapace 1.4 mm long, 1.2 wide. First femur 1.6 mm, patella and tibia 1.8, metatarsus 1.1, tarsus 0.5. Second patella and tibia 1.5 mm, third 1.0, fourth 1.3.

Male from Finca La Selva. Coloration as in female, but legs with dusky rings. Carapace has a dusky M-shaped mark, with its lateral arms along edge of carapace. Dorsum of abdomen white with dusky spots all around; venter with white pigment spots. Posterior median eyes same diameter as anterior medians, lateral eyes 0.7 diameter. Anterior medians 0.8 their diameter apart, 0.5 from laterals. Posterior medians a little less than their diameter apart, a little less than 2 from laterals. Palpus with 2 long patellar setae. Endite with tooth. Axis of coxal hook parallel to axis of first coxa. Legs with long black setae. Second tibia with long macrosetae. Total length 2.1 mm. Carapace 1.1 mm long, 1.0 wide. First femur 1.2 mm, patella and tibia 1.4, metatarsus 0.8, tarsus 0.5. Second patella and tibia 1.0 mm, third 0.7, fourth 0.9.

*Variation.* Total length of females 2.7 to 3.5 mm, of males 2.1 to 2.7. Some females from the type locality have a thinner, longer scape than the holotype illustrated. The lateral plates of the epigynum may be a variable distance apart.

*Diagnosis.* The shiny, large oval lateral

plates in posterior view (Fig. 336) and the oval base of the epigynum (Fig. 335) separate females from other small species. The male palpus has a large median apophysis diagonal in position with a spine on each end and a distinctive large conductor (Fig. 338). The median apophysis resembles that of the North American *A. pratensis* (Levi, 1973, fig. 30), but the abdomen of *A. pratensis* is longer than wide.

*Natural History.* Females have been collected from beneath a tree at the edge of a jungle in Guatemala, and from vegetation in a stream bed at the Osa Peninsula in Costa Rica. Some specimens were collected at night. A female from Turrialba has 13 nonagglutinated eggs in her egg-sac.

*Paratypes.* GUATEMALA Tikal, 7 July 1965, ♂ (W. Sedgwick, MCZ). COSTA RICA *Heredia:* Finca La Selva, Dec. 1982, ♂ (W. Eberhard, MCZ); 9 Oct. 1981, ♀ (C. Griswold AR-29, MCZ); Jan. 1978, ♀ (W. Eberhard 1299, MCZ). *Cartago:* Turrialba, 11 Mar. 1967, ♀ (W. Peck, CAS); 14 Mar. 1967, ♂ (W. Peck, CAS). *Puntarenas:* Rincon, Osa, nr. R. Agua Buena, 18 Feb. 1973, ♀ (W. Eberhard, MCZ).

*Araneus sextus* (Chamberlin)

## Figures 339–342; Map 5

*Aranea sexta* Chamberlin, 1916: 255, pl. 19, fig. 7, imm. Immature female holotype from Panama, in MCZ, examined. Roewer, 1942: 852.  
*Araneus sextus*:—Bonnet, 1955: 598.

*Description.* Female. Carapace streaky orange. Sternum and legs orange. Dorsum of abdomen white and orange, transversely banded (Fig. 341). Venter orange with white pigment. Eyes subequal. Anterior medians a little less than 2 diameters apart, 2 from laterals. Posterior medians their diameter apart, a little more than 2 from laterals. Three very long anterior teeth on chelicerae. Prolateral and dorsal sides of tibiae, metatarsi, and tarsi with field of long and short setae. Abdomen wider than long, with lateral pointed humps (Fig. 341). Total length 6.0 mm. Carapace 2.5 mm long, 2.0 wide. First femur 2.8 mm, patella

and tibia 3.8, metatarsus 2.2, tarsus 0.8. Second patella and tibia 2.8 mm, third 1.6, fourth 2.2.

Male. Coloration as in female, but legs indistinctly ringed and abdomen with less dark pigment. Eyes subequal. Anterior medians 1.5 diameters apart, 1.4 from laterals. Posterior medians a little less than their diameter apart, 1.5 from laterals. Endite without tooth. No hook on first coxa. Second tibia not modified. Abdomen sub-spherical, with tubercle on each shoulder. Total length 1.8 mm. Carapace 0.9 mm long, 0.8 wide. First femur 1.0 mm, patella and tibia 1.1, metatarsus 0.7, tarsus 0.4. Second patella and tibia 0.9 mm, third 0.5, fourth 0.7.

*Note.* Photograph showed a living female from Manaus to be orange-brown and white (H. Höfer, photograph).

*Variation.* Total length of females 6.0 to 8.3 mm, of the much smaller males 1.7 to 2.7.

*Diagnosis.* The shape of the abdomen, unlike other Neotropical *Araneus* species, resembles that of *Epeiroides bahiensis* (Keyserling) (Levi, 1989) but the epigynum, with a small stump of a scape (Fig. 339), differs. The median apophysis of the male palpus has a spine directed "down" (facing the cymbium), and is frayed at the lateral end (Fig. 342).

*Natural History.* This species has been found in low elevation forests, one record from 1700 m elevation.

*Distribution.* Guatemala to Manaus, Brazil (Map 5). both Roewer (1942) and Bonnet (1955) erroneously list the species as occurring in Peru. No such record exists; although published in a paper on Peruvian spiders, the holotype specimen came from Panama.

*Records.* GUATEMALA *Escuintla*: Tiquisate, June 1947, ♀ (C., P. Vaurie, AMNH). PANAMA *Panamá*: El Valle, July 1936, ♀; Arraiján, 6 July 1950, ♀; Corozal, 4 Jan. 1958, ♂; Summit, Aug. 1950, ♂; nr. Cocoli, 13 Jan. 1958, ♂; Diablo Heights, 19 Dec. 1957, ♂ (all A. M. Chickering, MCZ). COLOMBIA *Antioquia*: La Estrella, 1700–

1880 m, June–Aug. 1974, ♂ (P. A. Schneble, MCZ). BRAZIL *Amazonas*: Manaus, Paspalum, 26 Feb. 1987, ♀ (H. Höfer, INPA).

*Araneus microsoma* (Banks)  
Figures 343–346; Map 5

*Epeira microsoma* Banks, 1909: 211, pl. 6, figs. 39, 45, ♀, ♂. Male holotype and female paratype from bushes, La Palma [Prov. Cartago, 15 km NE of San José], Costa Rica, in MCZ, examined.

*Aranea microsoma*:—Roewer, 1942: 847.

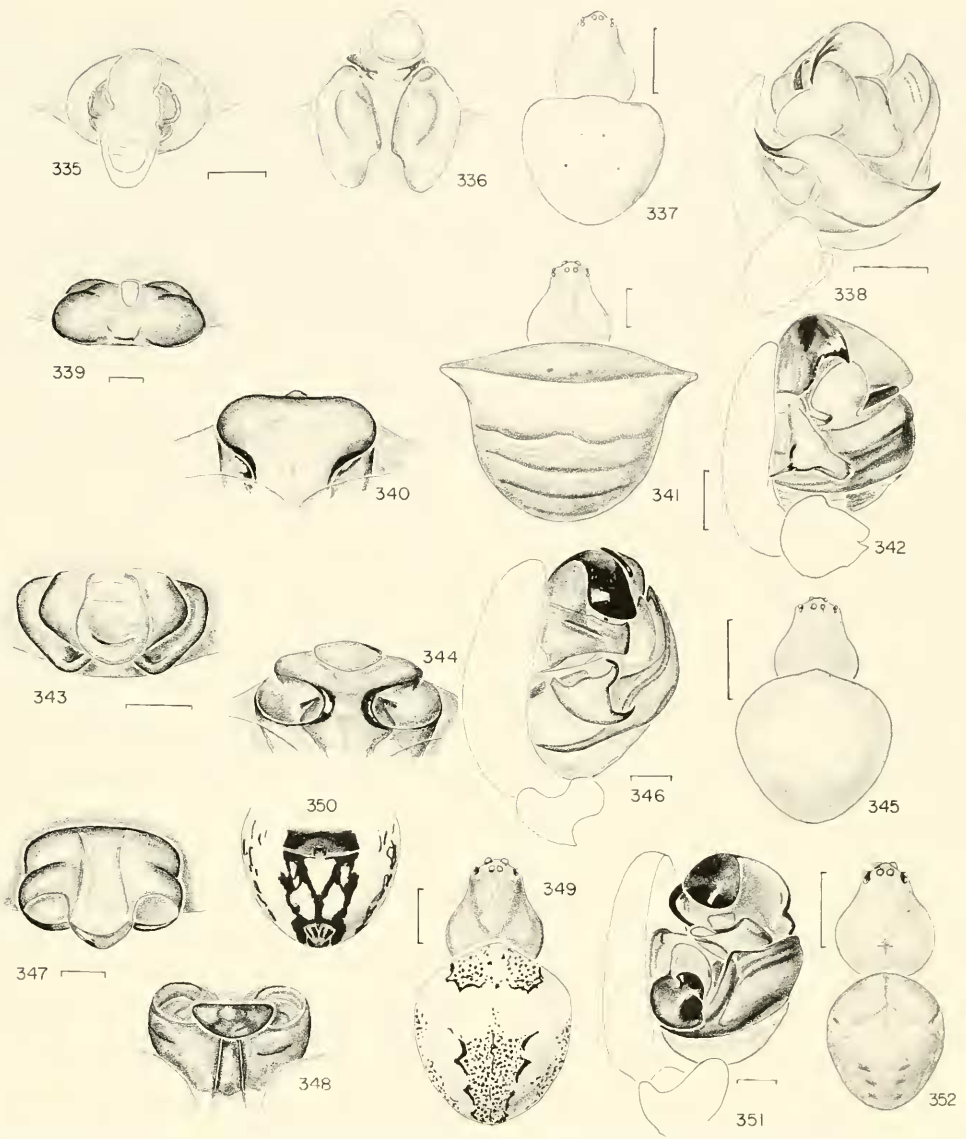
*Araneus microsoma*:—Bonnet, 1955: 544.

*Description.* Female. All orange, sternum slightly dusky, abdomen lighter than carapace. Eyes small. Posterior median eyes 2.2 and 1.5 diameters of anterior medians (left and right eyes are different sizes), laterals 1 diameter. Anterior median eyes 2 diameters apart, 2.5 from laterals. Posterior median eyes separated by 0.7 diameter of the larger eye, slightly less than 2 diameters from laterals. Abdomen as wide as long, with indistinct humps (Fig. 345). Total length 2.8 mm. Carapace 1.1 mm long, 0.8 wide. First femur 1.3 mm, patella and tibia 1.5, metatarsus 0.9, tarsus 0.5. Second patella and tibia 1.3 mm, third 0.8, fourth 1.1.

Male. Coloration as in female. Venter of abdomen slightly dusky. Eyes small, subequal. Anterior median eyes slightly less than their diameter apart, 1.5 from laterals. Posterior median eyes their diameter apart, 1.8 from laterals. Endite with indistinct tooth. First coxa without hook. Second tibia thinner than first, with a few macrosetae. Abdomen oval, longer than wide. Total length 2.1 mm. Carapace 1.1 mm long, 1.0 wide. First femur 1.4 mm, patella and tibia 1.6, metatarsus 1.0, tarsus 0.5. Second patella and tibia 1.4 mm, third 0.7, fourth 1.1.

Banks described the male's abdomen as yellow-brown with an indistinct dark brown median area containing a pair of yellow spots.

*Diagnosis.* In posterior view, the epigynum has two transverse oval depressions (Fig. 344). The median apophysis of the



Figures 335–338. *Araneus selva* n. sp. 335–337. Female. 335. Epigynum, ventral. 336. Epigynum, posterior. 337. Dorsal. 338. Male, left palpus.

Figures 339–342. *A. sextus* (Chamberlin). 339–341. Female. 339. Epigynum, ventral. 340. Epigynum, posterior. 341. Dorsal. 342. Male, left palpus.

Figures 343–346. *A. microsoma* (Banks). 343–345. Female. 343. Epigynum, ventral. 344. Epigynum, posterior. 345. Dorsal. 346. Male palpus.

Figures 347–350. *A. lintatus* n. sp., female. 347. Epigynum, ventral. 348. Epigynum, posterior. 349. Dorsal. 350. Abdomen, ventral.

Figures 351, 352. *A. chiapas* n. sp., male. 351. Palpus. 352. Dorsal.

Scale lines. 1.0 mm, genitalia 0.1 mm.

male has two spines, both directed laterally (Fig. 346).

*Araneus lintatus* new species  
Figures 347–350; Map 5

*Holotype.* Female holotype from mountain near Asia [12°07'S, 76°30'W], Dpto. Lima, Peru (W. Weyrauch), in AMNH. The specific name is an arbitrary combination of letters.

*Description.* Female. Carapace dusky orange, sides of head darker. Chelicerae dusky orange. Labium, endites black. Sternum black with median longitudinal light streak. Coxae orange; legs dusky orange with black spots and some fine black rings. Dorsum of abdomen white with a spotted area anteriorly and a spotted folium posteriorly (Fig. 349). Venter black with a triangular white patch posterior to epigynum, and pairs of white patches; sides light and streaked (Fig. 350). Posterior median and anterior lateral eyes same diameter as anterior medians, posterior laterals 0.8 diameter. Anterior median eyes 1.3 diameters apart, 1.3 from laterals. Posterior median eyes 0.5 diameter apart, slightly more than 2 from laterals. Abdomen oval, longer than wide with a slight anterior median hump (Fig. 349). Total length 4.7 mm. Carapace 2.0 mm long, 1.6 wide. First femur 2.1 mm, patella and tibia 2.5, metatarsus 1.8, tarsus 0.9. Second patella and tibia 2.3 mm, third 1.3, fourth 2.0.

*Diagnosis.* The female is distinguished by the scape, the sides of which appear fused to the base of the epigynum (Fig. 347).

*Araneus chiapas* new species  
Figures 351, 352; Map 5

*Holotype.* Male from 5 km W of San Cristóbal de las Casas on Hwy. 190, Chiapas, Mexico [92°41'W, 16°44'N], 2100 m, oak-pine woodland (W. Maddison, R. S. Anderson, 83-126), in MCZ. The specific name is a noun in apposition after the type locality.

*Description.* Male. Carapace and legs orange, sternum dusky orange. Dorsum of abdomen with a chevron consisting of two white lines anteriorly, and a transverse white line in center; dusky paired patches

posteriorly. Venter pale dusky orange, without marks. Posterior median eyes same diameter as anterior medians, lateral eyes 0.8 diameter. Anterior median eyes 0.8 their diameter apart, their diameter from laterals. Posterior median eyes 0.7 diameter apart, 2 from laterals. Endite with tooth. First coxa without hook. First tibia thicker than second, with macrosetae. Abdomen spherical with two indistinct humps. Total length 3.1 mm. Carapace 1.5 mm long, 1.3 wide. First femur 1.4 mm, patella and tibia 2.1, metatarsus 1.3, tarsus 0.6. Second patella and tibia 1.7 mm, third 0.9, fourth 1.3.

*Diagnosis.* The two wide, sclerotized lobes of the median apophysis separate this male from others (Fig. 351).

*Araneus bryantae* Brignoli  
Figures 353–356; Map 5

*Neosconella parva* Bryant, 1945: 381, figs. 19, 24, ♀. Female holotype from foothills and Cordillera Central, S of Santiago, Dominican Republic, in MCZ, examined.

*Araneus bryantae* Brignoli, 1983: 262. New name for *Neosconella parva* since preoccupied by *Araneus parva* Karsch, 1878.

*Description.* Female. Carapace orange, dusky on sides. Chelicerae orange. Labium, endites dusky. Sternum dark dusky. Coxae, legs orange. Dorsum of abdomen with large white patch and paired dusky patches on each side of white patch (Fig. 355); venter dusky with a white longitudinal band on each side (Fig. 356). Posterior median and lateral eyes same diameter as anterior medians. Anterior median eyes 1.5 diameters apart, 1.5 from laterals. Posterior median eyes their diameter apart, 2.7 from laterals. Abdomen oval, longer than wide (Fig. 355). Total length 4.0 mm. Carapace 1.5 mm long, 2.7 wide. First femur 1.7 mm, patella and tibia 2.1, metatarsus 1.3, tarsus 0.6. Second patella and tibia 1.9 mm, third 1.1, fourth 1.7.

*Variation.* The holotype has the abdomen about as wide as long; the abdomen of the paratype is longer than wide.



**Diagnosis.** This species is distinguished from *A. elizabethae* (Figs. 357, 358) and *A. hotteiensis* (Figs. 361, 362) by the wide scape, which narrows posteriorly (Fig. 353).

**Distribution.** Hispaniola (Map 5).

**Record.** GREATER ANTILLES *Dominican Republic*: Loma Rucilla Mts., Cord. Central, 1600–2600 m, June 1938, ♀ (P. J. Darlington, MCZ).

***Araneus elizabethae* new name**  
Figures 357–360; Map 5

*Meta blanda* Bryant, 1945: 386, fig. 22, ♀. Female holotype from Kenscoff, Ouest, Haiti, 1400 m, in MCZ, examined. The species is named after E. Bryant.

*Meta bryantae* Brignoli, 1983. New name for *blanda*, preoccupied by *Meta blanda* L. Koch, 1878, and *Araneus blandus* (Blackwall, 1865), but also preoccupied in the combination *Araneus bryantae* by Brignoli, 1983.

**Description.** Female. Carapace yellow with a dusky patch, edge of thorax dusky. Sternum black. Coxae and legs yellow. Dorsum of abdomen with wide white longitudinal and transverse bands forming cross; dusky marks beside bands (Fig. 359). Black longitudinal band on sides; venter with dusky white transverse patch behind epigynum and white longitudinal band on each side (Fig. 360). Posterior median and lateral eyes 1.2 diameters of anterior medians. Anterior medians 1.4 diameters apart, 1.4 from laterals. Posterior median eyes 0.6 diameter apart, 1.5 from laterals. Abdomen oval (Fig. 359). Total length 2.9 mm. Carapace 1.1 mm long, 0.8 wide. First femur 1.2 mm; patella and tibia 1.5, metatarsus 1.0, tarsus 0.5. Second patella and tibia 1.4 mm, third 0.7, fourth 1.2.

**Diagnosis.** This species differs from *A. bryantae* (Fig. 353) by having the origin of the scape, the anterior end, narrow (Fig. 357).

**Natural History.** The species was collected in a rain forest, at 2000 m elevation, in Valle Nuevo.

**Distribution.** Hispaniola (Map 5).

**Records.** GREATER ANTILLES *Dominican Republic*: Loma Rucilla Mts.,

Cord. Central, 1600–2600 m, June 1938, 9♀ (P. J. Darlington, MCZ); Valle Nuevo, Cord. Central, Aug. 1938 (P. J. Darlington, MCZ).

***Araneus hotteiensis* (Bryant)**  
Figures 361–364, Map 5

*Meta hotteiensis* Bryant, 1945: 387, fig. 25, ♀. Female holotype from foothills NE of Massif de la Hotte, 1000–1100 m, Haiti, in MCZ, examined. Brignoli, 1983: 230.

*Araneus hotteiensis*:—Levi, 1986: 105.

**Description.** Female. Carapace and sternum orange-yellow. Legs orange-yellow with indistinct dusky rings. Dorsum of abdomen dusky with indistinct folium (Fig. 363); sides dusky; venter with median dusky band, sides light, dusky ring around spinnerets (Fig. 364). Posterior median eyes 0.7 diameter of anterior medians, lateral eyes 0.6 diameter. Anterior medians a little less than their diameter apart, 0.8 from laterals. Posterior medians 0.4 their diameter apart, 2 from laterals. Abdomen oval, longer than wide (Fig. 363). Total length 4.1 mm. Carapace 1.5 mm long, 1.2 wide. First femur 1.7 mm, patella and tibia 2.2, metatarsus 1.5, tarsus 0.6. Second patella and tibia 1.8 mm, third 0.9, fourth 1.6.

**Diagnosis.** The posterior rim of the openings of the epigynum in ventral view (Fig. 361) separates this species from *A. hispaniola* (Fig. 366) and *A. elizabethae* (Fig. 358).

***Araneus hispaniola* (Bryant)**  
Figures 365–368; Map 5

*Aranea hispaniola* Bryant, 1945: 366, fig. 2, ♀. Female holotype from Kenscoff, 4300 ft [1300 m], Haiti, in MCZ, examined.

*Araneus hispaniola*:—Brignoli, 1983: 262.

**Description.** Female. Carapace light orange, head mottled dusky. Sternum black; coxae light orange. Legs spotted black on orange. Dorsum of abdomen mottled dusky on white, with indistinct outline of folium (Fig. 367). Venter with black area enclosing a pair of anterior light spots; a light band on each side (Fig. 368). Eyes sub-

equal. Anterior medians their diameter apart, their diameter from laterals. Posterior medians 0.7 diameter apart, 2 from laterals. Abdomen oval, longer than wide. Total length 5.0 mm. Carapace 1.7 mm long, 1.6 wide. First femur 2.2 mm, patella and tibia 3.1, metatarsus 2.4, tarsus 1.0. Second patella and tibia 2.7 mm, third 1.4, fourth 2.3.

*Note.* The description and illustrations were made from a specimen from Kenscoff, Haiti, not a type.

*Diagnosis.* This species is distinguished from *A. bryantae* (Figs. 353, 354), which has orange legs, by its spotted legs and the shape of the openings of the epigynum on each side of the scape (Fig. 36).

*Distribution.* Hispaniola (Map 5).

*Records.* GREATER ANTILLES *Dominican Republic:* San José de las Matas, 450 m, June 1938, ♀ (P. J. Darlington, MCZ). HAITI Kenscoff, 1500–2100 m, Sept. 1934, ♀ (P. J. Darlington, MCZ) (a paratype of *Eustala perdita* Bryant).

### *Araneus faxoni* (Bryant)

Figures 369–371; Map 5

*Aranea faxoni* Bryant, 1940: 334, figs. 102, 103, ♀.

Female holotype from Siboney, Cuba, in MCZ, examined.

*Araneus faxoni*:—Brignoli, 1983: 262.

*Description.* Female holotype faded pale yellow-white. Posterior median and lateral

eyes 1.5 diameters of anterior medians. Anterior median eyes their diameter apart, their diameter from laterals. Abdomen as wide as long, with anterior humps (Fig. 371). Total length 2.5 mm. Carapace 0.9 mm long, 0.9 wide. First femur 1.1 mm, patella and tibia 1.4, metatarsus 0.8, tarsus 0.4. Second patella and tibia 1.2 mm, third 0.8, fourth 1.1.

*Diagnosis.* This female is distinguished by a round scape and a small opening on each side of the base of the epigynum (Fig. 369); the abdomen is shield-shaped (Fig. 371).

### *Araneus bimini* new species

Figures 372–375; Map 5

*Holotype.* Female holotype from Bennetts Harbour, Cat Island, Bahama Islands, 24 Mar. 1953 (E. B. Hayden no. 236), in AMNH. The specific name is a noun in apposition after a collecting locality.

*Description.* Female holotype. Carapace yellowish, without black eye rings. Sternum and legs yellowish. Dorsum of abdomen with greenish cast and white pigment spots (Fig. 374); venter with white pigment spots. Eyes subequal. Anterior median eyes 1.5 diameters apart, 1.5 from laterals. Posterior median eyes 0.5 their diameter apart, 2 from laterals. Total length 3.8 mm. Carapace 1.3 mm long, 1.1 wide. First femur 1.3 mm, patella and tibia 1.6, metatarsus 1.1, tarsus 0.5. Second pa-

→

Figures 353–356. *Araneus bryantae* Brignoli, female. 353. Ventral. 354. Posterior. 355. Dorsal. 356. Abdomen, ventral.

Figures 357–360. *A. elizabethae* new name, female. 357. Epigynum, ventral. 358. Epigynum posterior. 359. Dorsal. 360. Abdomen, ventral.

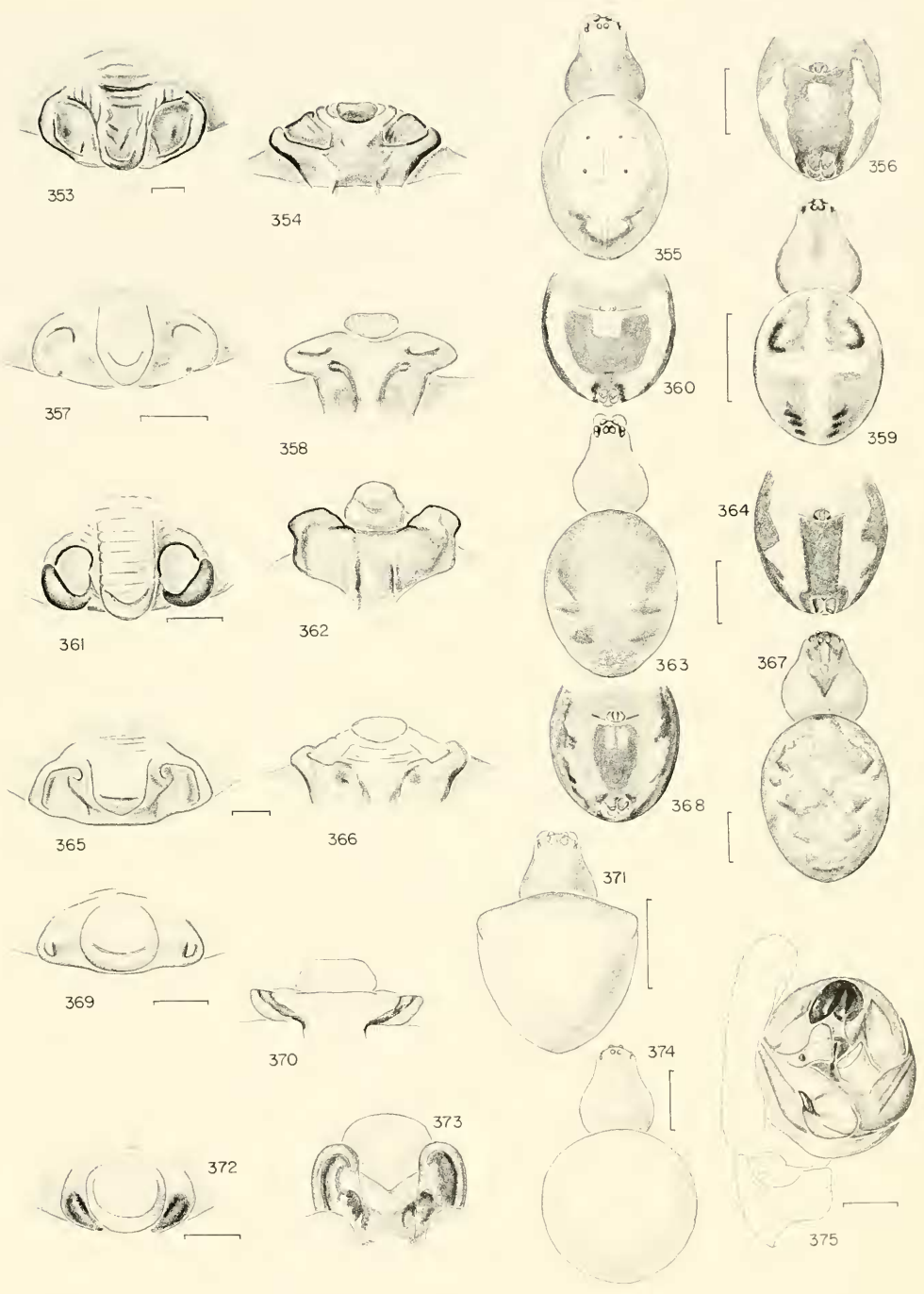
Figures 361–364. *A. hotteiensis* (Bryant), female. 361. Epigynum, ventral. 362. Epigynum, posterior. 363. Dorsal. 364. Abdomen, ventral.

Figures 365–368. *A. hispaniola* (Bryant), female. 365. Epigynum, ventral. 366. Epigynum, posterior. 367. Female. 368. Abdomen, ventral.

Figures 369–371. *A. faxoni* (Bryant) female. 369. Epigynum, ventral. 370. Epigynum, posterior. 371. Dorsal.

Figures 372–375. *A. bimini* n. sp. 372–374. Female. 372. Epigynum, ventral. 373. Epigynum, posterior. 374. Dorsal. 375. Male, left palpus

*Scale lines.* 1.0 mm, genitalia 0.1 mm.



tella and tibia 1.4 mm, third 0.9, fourth 1.3.

Male from Six Hill Cays. Coloration as in female. Secondary eyes 0.7 diameter of anterior medians. Anterior median eyes their diameter apart, 0.8 from laterals. Posterior median eyes 0.8 diameter apart, 2 from laterals. First coxa without hook. Second tibia thinner than first. Abdomen oval, longer than wide. Total length 2.4 mm. Carapace 1.2 mm long, 1.1 wide. First femur 1.5 mm, patella and tibia 1.7, metatarsus 1.3, tarsus 0.5. Second patella and tibia 1.4 mm, third 0.8, fourth 1.2.

*Variation.* Total length of females 3.3 to 3.8 mm, of males 2.2 to 2.4.

*Diagnosis.* Unlike that of similar species, the round scape is wider than the portion of the base of the epigynum showing on either side and the opening is hidden by the scape (Figs. 372, 373). The embolus of the palpus is hidden by a lobe of the hematodocha and the conductor (Fig. 375). The species is close to *A. kerr* Levi (1981: 254, figs. 1-4).

*Distribution.* Bahama Islands (Map 5).

*Paratypes.* BAHAMA ISLANDS Driggs Hill by South Bight, Andros Isl., 27 Apr. 1953, ♀, ♂ (Hayden, Giovannoli, AMNH); Pine Ridge, Grand Bahama Isl., 13 May 1953, ♂ (E. B. Hayden, AMNH); W end, hotel, Grand Bahama Isl., 3, 4 Mar. 1967, ♀, ♂ (A. M. Nadler, AMNH); South Bimini, May 1951, 2♀, 3♂ (W. J. Gertsch, M. A. Cazier, AMNH, MCZ); Hopetown, Elbow Cay, Great Abaco Isl., June 1951, ♂ (W. G. Hassler, AMNH); Six Hill Cays, off South Caicos Isl., 12 Feb. 1953, ♂ (G. B. Rabb, AMNH).

### *Araneus colima* new species

Figures 376-380; Map 5

*Holotype.* Female holotype and six female and one male paratypes from Valle Verde, Colima, Mexico, 1 Aug. 1954 (W. J. Gertsch), in AMNH. The specific name is a noun in apposition after the type locality.

*Description.* Female. Carapace orange. Sternum brown. Coxae, legs orange. Dorsum of abdomen gray with paired white patches (Fig. 378); venter black with a

white longitudinal band on each side almost to spinnerets (Fig. 379). Posterior median eyes 1.6 diameters of anterior median eyes, anterior laterals 1 diameter, posterior laterals 1.1. Anterior median eyes 1.5 diameters apart, 2 from laterals; posterior median eyes 0.5 diameter apart, 2.5 from laterals. Abdomen oval. Total length 3.7 mm. Carapace 1.5 mm long, 1.2 wide. First femur 1.1 mm, patella and tibia 1.3, metatarsus 0.7, tarsus 0.5. Second patella and tibia 1.1 mm, third 0.7, fourth 1.1.

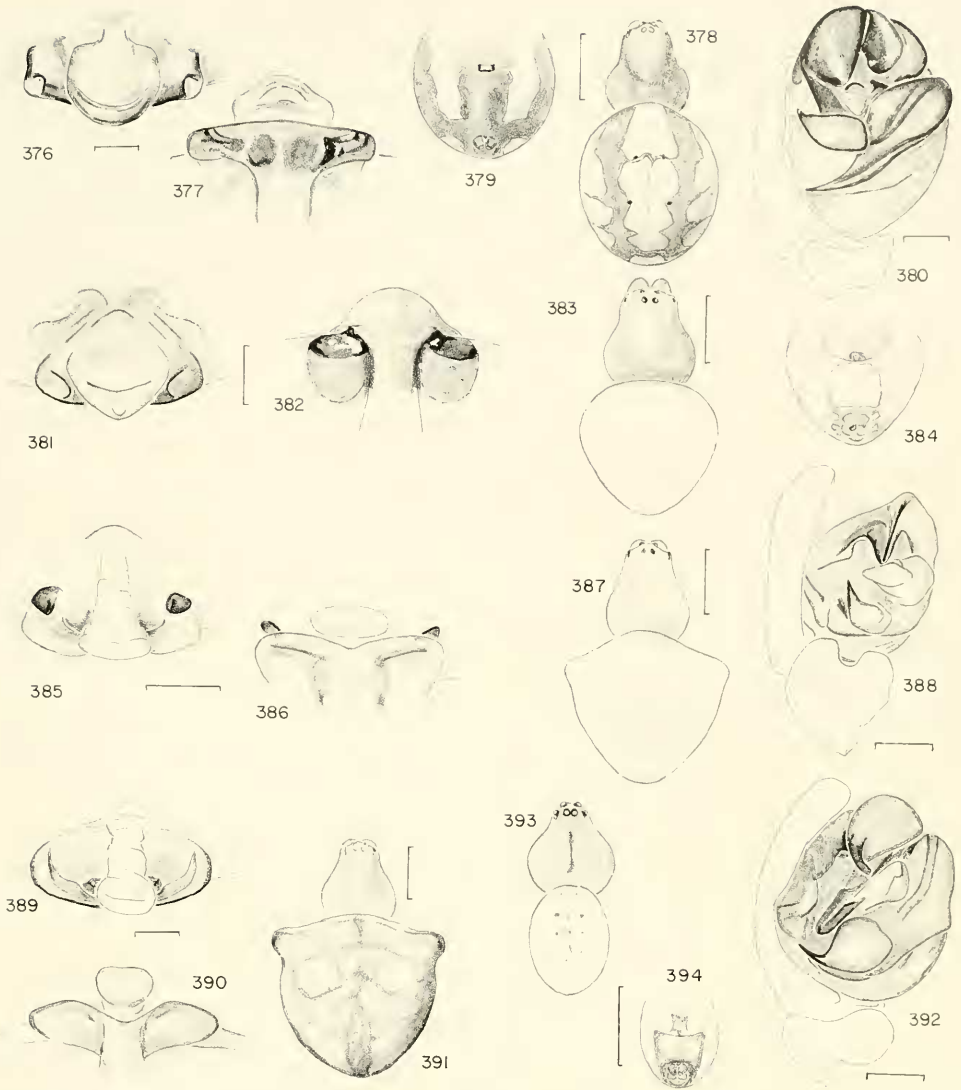
Male. Coloration same as in female, but white areas on abdomen less discrete. Posterior median eyes subequal, anterior lateral eyes 0.8 diameter of anterior median eyes, posterior lateral eyes 0.6. Anterior median eyes their diameter apart, 1.5 from laterals. Posterior median eyes 0.5 diameter apart, 2.2 from laterals. Endite with tooth. First coxa without hook. First tibia thicker than second, with macrosetae. Abdomen oval, longer than wide. Total length 2.7 mm. Carapace 1.4 mm long, 1.2 wide. First femur 1.3 mm, patella and tibia 1.5, metatarsus 0.4, tarsus 0.5. Second patella and tibia 1.2 mm, third 0.7, fourth 1.1.

*Variation.* Several females have the scape torn off the epigynum. Total length of females 3.1 to 4.0 mm, of males 2.7 to 3.3. One specimen has the scape narrower than in the other females. Some specimens are dark colored.

*Diagnosis.* The round scape has a stalk and the openings of the epigynum are smaller (Fig. 376) than those of *A. latio* (Figs. 381, 382). The male is distinguished from others by an almost rectangular median apophysis drawn out to a spine facing the cymbium (Fig. 380).

*Distribution.* West coast of Central Mexico (Map 5).

*Paratypes.* MEXICO Sinaloa: 3.2 km S Elota, 11 Sept. 1966, ♂ (J., W. Ivie, AMNH); Villa Unión, 30 July 1953, ♀ (N. L. H. Kraus, AMNH); 13 km E Villa Unión, 26 Aug. 1965, 2♂ (W. J. Gertsch, R. Hastings, AMNH). Nayarit: 9 km E San Blas, 31 July 1967, ♂ (R. E. Leech, REL); vicinity of San Blas, common (AMNH); Jalisco, 27 July



Figures 376–380. *Araneus colima* n. sp. 376–379. Female. 376. Epigynum, ventral. 377. Epigynum, posterior. 378. Dorsal. 379. Abdomen, ventral. 380. Male, left palpus.

Figures 381–384. *A. lanio* n. sp., female. 381. Epigynum, ventral. 382. Epigynum, posterior. 383. Dorsal. 384. Abdomen, ventral.

Figures 385–388. *A. boneti* n. sp. 385–387. Female. 385. Epigynum, ventral. 386. Epigynum, posterior. 387. Dorsal. 388. Male palpus.

Figures 389–391. *A. ana* n. sp., female. 389. Epigynum, ventral. 390. Epigynum, posterior. 391. Dorsal.

Figures 392–394. *A. jalisco* n. sp., male. 392. Palpus. 393. Dorsal. 394. Abdomen, ventral.

Scale lines. 1.0 mm, genitalia 0.1 mm.

1954, ♀ (W. J. Gertsch, AMNH); 32 km N Tepic, 5 Aug. 1956, 10♀, 5♂, 3 imm. (W. J. Gertsch, V. Roth, AMNH). *Jalisco*: Puerto Vallarta, Aug., Sept. 1957, 5♀, ♂ (J. A. Comstock, AMNH); across river from Colima, 29 Aug. 1965, ♂ (W. J. Gertsch, R. Hastings, AMNH). *Colima*: Las Humedades, Armería, 19 Jan., 1943, ♀, ♂ (F. Bonet, AMNH); Armería, 1 Aug. 1954, 2♀, 1♂ (W. J. Gertsch, AMNH); Cuyutlán, 9 Jan. 1943, ♀, ♂ (F. Bonet, AMNH); Valle Verde, 1 Aug. 1954, ♂ (W. J. Gertsch, AMNH).

*Araneus lanio* new species

Figures 381–384; Map 5

*Holotype*. Female from 27 km SW of Valle Nacional on Hwy. 175, ca. 1200 m elevation, Oaxaca, Mexico, 24 June 1983 (W. Maddison 83-084), in MCZ. The specific name is an arbitrary combination of letters.

*Description*. Female. Carapace, sternum, legs light orange-yellow. Dorsum of abdomen white; venter with white square (Fig. 384). Eyes small and subequal. Anterior medians 2 diameters apart, 4 from laterals. Posterior medians a little less than 2 diameters apart, a little less than 4 from laterals. Abdomen as wide as long, pointed behind (Fig. 383). Total length 3.6 mm. Carapace 1.6 mm long, 1.4 wide. First femur 1.4 mm, patella and tibia 1.7, metatarsus 1.1, tarsus 0.5. Second patella and tibia 1.7 mm, third 1.1, fourth 1.5.

*Diagnosis*. This female differs from *A. colima* (Figs. 376, 377) by having a smaller base of the epigynum, with larger openings and the scape broadly attached (Fig. 381).

*Araneus boneti* new species

Figures 385–388; Map 5

*Holotype*. Female holotype and male paratype from Santiago, Colima, Mexico, 14 Jan. 1943 (F. Bonet), in AMNH. The species is named after the collector.

*Description*. Female. Carapace and sternum orange-white; no black around eyes. Legs orange-white. Dorsum and sides

of abdomen covered with small white pigment spots; venter without pigment in center. Posterior median eyes same diameter as anterior medians, lateral eyes 0.8 diameter. Anterior median eyes 1.8 diameters apart, 1.8 from laterals. Posterior median eyes 1.5 diameters apart, 2.5 from laterals. Abdomen shield-shaped, slightly wider than long (Fig. 387). Total length 3.8 mm. Carapace 1.5 mm long, 1.2 wide. First femur 1.9 mm, patella and tibia 2.2, metatarsus 1.6, tarsus 0.6. Second patella and tibia 1.8 mm, third 1.0, fourth 1.6.

Male. Coloration as in female. Posterior median eyes 0.8 diameter of anterior medians, lateral eyes 0.7 diameter. Anterior median eyes a little less than 2 diameters apart, 1.5 from laterals. Posterior median eyes 1.5 diameters apart, 1.7 from laterals. Palpus with two patellar setae on one side, three on other. Endite with tooth. First coxa without hook. Second tibia as thick as first; no modified tibiae. Abdomen oval, longer than wide, pointed behind, without humps. Total length 2.1 mm. Carapace 1.1 mm long, 0.9 wide. First femur 1.8 mm, patella and tibia 1.9, metatarsus 1.4, tarsus 0.5. Second patella and tibia 1.5 mm, third 0.7, fourth 1.3.

*Note*. The embolus appears torn out of the male palpus. The conductor lacks a tooth at its base.

*Diagnosis*. The palpal tibia is as long as wide. The female has a narrower scape than the female of *A. mazamitla* (Fig. 400) and the slits on each side of the scape are shorter (Fig. 385). The male has the palpal tibia as wide as long and has a short, pointed median apophysis and a narrow terminal apophysis (Fig. 388).

*Araneus ana* new species

Figures 389–391; Map 5

*Holotype*. Female from 10 km W of Santa Ana, San José Prov., Costa Rica, 800 m, Nov. 1983 (W. Eberhard), in MCZ. The specific name is a noun in apposition after the type locality.

*Description*. Female. Carapace and sternum light yellow, no black pigment

around eyes. Legs light yellow. Dorsum of abdomen dusky with four white patches (Fig. 391); venter white. Eyes small and subequal. Anterior median eyes 2 diameters apart, 2 from laterals. Posterior median eyes a little more than their diameter apart, a little over 2 from laterals. Abdomen with pair of dorsal humps (Fig. 391). Total length 4.4 mm. Carapace 1.6 mm long, 1.3 wide. First femur 2.0 mm, patella and tibia 2.2, metatarsus 1.7, tarsus 0.7. Second patella and tibia 1.8 mm, third 1.0, fourth 1.6.

*Diagnosis.* This species is distinguished from others by the epigynum, which in ventral view has a transverse lip on each side of the scape (Fig. 389), and in posterior view has the sclerites fused (Fig. 390).

*Araneus jalisco* new species  
Figures 392–394; Map 5

*Holotype.* Male from Guadalajara, Jalisco, Mexico, 1 Aug. 1947 (C. Goodnight, B. Malkin), in AMNH. The specific name is a noun in apposition after the type locality.

*Description.* Male. Carapace light orange with a median dusky line. Sternum dusky with margin black. Legs light orange. Dorsum of abdomen white (Fig. 393); venter with a wide black band from genital groove and surrounding spinnerets; enclosing two indistinct white patches side by side; dusky in middle of epigastric area (Fig. 394). Posterior median eyes 0.8 diameter of anterior medians, anterior laterals 0.8 diameter, posterior laterals 0.7. Anterior median eyes their diameter apart, 0.5 from laterals. Posterior medians 0.5 diameter apart, a little less than 2 from laterals. Endite with tooth. First coxa without hook. Second tibia thinner than first; first with macrosetae. Abdomen oval, longer than wide (Fig. 393). Total length 2.5 mm. Carapace 1.4 mm long, 1.1 wide. First femur 1.4 mm, patella and tibia 1.9, metatarsus 1.4, tarsus 0.6. Second patella and tibia 1.6 mm, third 0.8, fourth 1.5.

*Diagnosis.* This male differs from others by having a looped embolus above the pear-

shaped median apophysis (Fig. 392). There is a tooth at the base of the conductor.

*Araneus detrimentosus* (O. P.-Cambridge)  
Figures 395–399; Map 5

*Epeira detrimentosa* O. P.-Cambridge, 1889, 1: 26, pl. 6, fig. 8, ♀. Female lectotype designated by Levi, 1973, from between Petab[?] and Chicoyito[?Chicoyoj] and Chilascó, Guatemala, in BMNH, examined. Keyserling, 1892, 4: 137, pl. 7, fig. 101, ♀. *Epeira nigrohumeralis* O. P.-Cambridge, 1893, 1: 111, pl. 15, fig. 3, ♀. Female holotype from Venta de Zopilote [?], 2800 ft, Mexico, in BMNH.

*Aranea detrimentosa*:—Roewer, 1942: 542.

*Aranea vesta* Bryant, 1948: 60, figs. 4, 6, ♀, ♂. Female holotype from Acapulco, Mexico, in MCZ, examined. NEW SYNONYMY.

*Cambridgepeira detrimentosa*:—Archer, 1951b: 2, figs. 8, 9.

*Araneus detrimentosus*:—Bonnet, 1955: 486. Levi, 1973: 538, figs. 398–414, ♀, ♂.

*Description.* Female from Mexico. Carapace orange with white down; sternum orange with white pigment. Legs orange, ringed dark. Dorsum of abdomen with brownish-black patches and white line on each side anteriorly, and pairs of dark spots posteriorly (Fig. 397). Venter with paired white spots (Fig. 398). High thorax. Eyes subequal. Anterior median eyes 2 diameters apart, a little less than 2 from laterals. Posterior medians their diameter apart, 2.5 from laterals. Abdomen oval, wider than long (Fig. 397). Total length 5.5 mm. Carapace 2.3 mm long, 1.8 wide. First femur 2.4 mm, patella and tibia 2.7, metatarsus 1.9, tarsus 0.8. Second patella and tibia 2.3 mm, third 1.2, fourth 1.9.

Male from Mexico. Coloration darker than in female. Dorsum of abdomen white with dark spots. Eyes subequal. Anterior median eyes 1.5 diameters apart, a little less than their diameter from laterals. Posterior medians their diameter apart, 2 from laterals. Endite with tooth. First coxa with hook. Second tibia not swollen. Total length 2.5 mm. Carapace 1.5 mm long, 1.2 wide. First femur 1.7 mm, patella and tibia 2.1, metatarsus 1.2, tarsus 0.7. Second patella and tibia 1.5 mm, third 0.9, fourth 1.2.

*Variation.* Total length of females 4.0 to 6.5 mm, of males 2.3 to 3.4.

*Diagnosis.* The epigynum has a scape that may widen toward the tip; the openings are behind a slit on each side of the scape (Fig. 395). In posterior view the median and lateral plates are fused into a single shield which projects ventrally on each side (Fig. 396). The male palpus has a curved embolus seen just above the median apophysis (Fig. 399). The median apophysis has just one spine, which projects away from the bulb (Fig. 399). Unlike most other small *Araneus* species, the male has a coxal hook.

*Natural History.* The species has been collected from a seasonal tropical forest in Yucatan.

*Distribution.* From Gulf coast in Florida to Texas and California to northern Colombia along coast and elsewhere, usually at low elevations (Map 5).

*Additional Records.* MEXICO *Tamaulipas:* San José (MCZ); 16 km S Reynosa (AMNH); 50 km S Reynosa (CAS). *Nuevo León:* Villagrán (AMNH). *Sonora:* Estero de Sargente, 20 km S Desemboque (AMNH); Desemboque (AMNH). *Durango:* San Juan del Río (AMNH); El Táscate (AMNH). *Sinaloa:* 67 km E Villa Unión, 1500 m (AMNH); 57 km E Villa Unión (AMNH); Mazatlan (AMNH, CAS, MCZ). *Nayarit:* San Blas (UCR); 8 km NW Tepic (AMNH). *Jalisco:* 5 km N Guanajuato (AMNH); 90 km N Playa de Santiago (CAS). *Colima:* Manzanillo (MCZ). *Veracruz:* Veracruz (AMNH, CAS, MCZ); nr. Lago Catemaco (AMNH); Jalapa (MCZ). *Guerrero:* Puerto Marquez (AMNH); Revolcadero (AMNH); Acapulco (AMNH, MCZ); 51 km SE Petatlán (MCZ). *Oaxaca:* Playa Hati, Río Tonto (MCZ); Huajuapán (MCZ); San Gerónimo (MCZ). *Yucatan:* 4 km N Xocempich, 20°47'N, 88°34'W (MCZ). *Chiapas:* Cintalapa (MCZ). GUA-TEMALA; San Jerónimo (AMNH). COSTA RICA *Guanacaste:* Monteverde (MZC). PANAMA *Chiriquí:* Boquete (AMNH, MCZ). *Coclé:* El Valle (AMNH). *Panamá:* Isl. Taboga (AMNH); Fort Kobbe (MCZ); Forest Reserve (MCZ). COLOMBIA *Magdalena:* Gaira, 10 m (MCZ).

### *Araneus mazamitla* new species Figures 400–403; Map 5

*Holotype.* Female holotype and four female, two male and two immature paratypes from 240 km E of Mazamitla, Colima, Mexico, 2 Aug. 1956 (W. J. Gertsch, V. Roth), in AMNH. The specific name is a noun in apposition after the type locality.

*Description.* Female. Carapace and sternum orange. Legs orange, distal articles dusky. Dorsum of abdomen lighter orange with three white longitudinal pigment lines (Fig. 402); venter orange. Posterior median eyes 1.2 diameters of anterior medians, laterals 1 diameter. Anterior median eyes a little less than their diameter apart, a little less than 2 from laterals. Posterior median eyes 0.6 their diameter apart, 2 from laterals. Abdomen oval. Total length 3.0 mm. Carapace 1.3 mm long, 1.1 wide. First femur 1.3 mm, patella and tibia 1.4, metatarsus 1.0, tarsus 0.5. Second patella and tibia 1.2 mm, third 0.8, fourth 1.3.

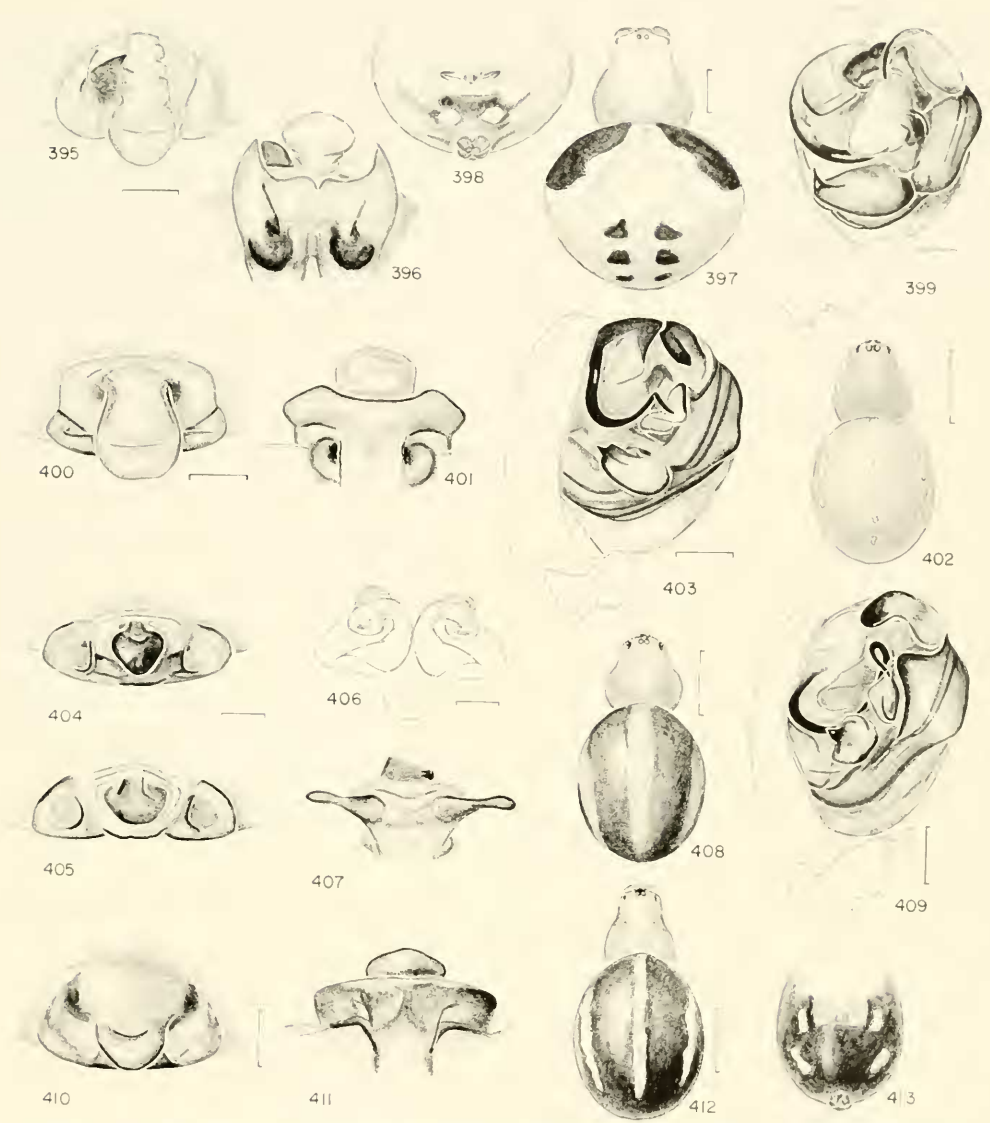
Male paratype. Color as in female. Eyes as in female. Endite with tooth. First coxa without hook. First tibia thicker than second and with larger macrosetae. Abdomen oval. Total length 2.6 mm. Carapace 1.4 mm long, 1.1 wide. First femur 1.4 mm, patella and tibia 1.5, metatarsus 1.0, tarsus 0.5. Second patella and tibia 1.2 mm, third 0.8, fourth 1.3.

*Variation.* Total length of males 2.2 to 2.6 mm.

*Diagnosis.* The female differs from *A. flavus* (Figs. 404–407) and *A. tepic* (Figs. 410, 411) by having the openings of the epigynum behind a transverse slit on each side of the scape, and by having the proximal end of the scape narrow (Fig. 400). The male is distinguished by the coiled shape of the embolus, which hangs from the “top” of the bulb (Fig. 403).

*Paratypes:* MEXICO *Jalisco:* Chamela, 100 m, Sept. 1988, 4♀, 3♂ (W. Eberhard, MCZ). *Colima:* Armería, 1 Aug. 1954, ♀, 2 imm. (W. J. Gertsch, AMNH). *Guerrero:* Acapulco, 17 June 1936, ♂ (L. I. Davis, AMNH).





Figures 395–399. *Araneus detrimmentosus* (O. P.-Cambridge). 395–398. Female. 395. Epigynum, ventral. 396. Epigynum, posterior. 397. Dorsal. 398. Abdomen, ventral. 399. Male, left palpus.

Figures 400–403. *A. mazamitla* n. sp. 400–402. Female. 400. Epigynum, ventral. 401. Epigynum, posterior. 402. Dorsal. 403. Male palpus.

Figures 404–409. *A. flavus* (O. P.-Cambridge). 404–408. Female. 404. Epigynum, ventral. 405. Epigynum, venter with torn-off scape. 406. Epigynum, cleared. 407. Epigynum, posterior. 408. Dorsal. 409. Male palpus.

Figures 410–413. *A. tepic* n. sp., female. 410. Epigynum, ventral. 411. Epigynum, posterior. 412. Dorsal. 413. Abdomen, ventral.

Scale lines. 1.0 mm, genitalia 0.1 mm.

*Araneus flavus* (O. P.-Cambridge)  
 Figures 404–409; Map 5

*Singa flava* O. P.-Cambridge, 1894: 136, pl. 17, fig. 15, ♂. Male holotype from Tierra Colorada, Guerrero, Mexico, on the road from Chilpancingo to Acapulco, 2000 ft [600 m], in BMNH, examined. Roewer, 1942: 877.

*Aranea flava* (F. P.-Cambridge), 1904: 518, pl. 51, fig. 3, ♂ (not *Epeira flava* Giebel, 1867).

*Araneus flavus*:—Bonnet, 1955: 504.

*Note.* The male holotype is on a pin in alcohol and lacks legs. O. P.-Cambridge described the species and named it *flava* but the legend to the plate is *lutea*. F. P.-Cambridge put legend and description together.

*Description.* Female from Nicaragua. Carapace glabrous, orange, with black around eyes; sternum orange. Legs orange, dusky dorsally. Dorsum of abdomen glabrous, black with three orange bands (Fig. 408); venter black with orange areas on each side. Posterior median eyes 1.3 diameters of anterior medians, anterior lateral eyes same diameter as anterior medians, posterior lateral eyes 1.1 diameters of anterior medians. Anterior median eyes 1.2 diameters apart, 2.2 from laterals. Posterior median eyes a little less than their diameter apart, 3 from laterals. Abdomen oval (Fig. 408). Total length 3.5 mm. Carapace 1.6 mm long, 1.2 wide. First femur 1.3 mm, patella and tibia 1.5, metatarsus 1.0, tarsus 0.5. Second patella and tibia 1.3 mm, third 0.8, fourth 1.3.

Male from Chiapas. Much lighter than female, with indistinct abdominal markings: white pigment spots in three lines on light background. Eyes small and subequal. Anterior median eyes 2 diameters apart, 2 from laterals. Posterior median eyes 1.5 diameters apart, 3 from laterals. Endite with tooth. First coxa without hook. Second tibia thinner than first. Total length 2.5 mm. Carapace 1.3 mm long, 1.1 wide. First femur 1.3 mm, patella and tibia 1.4, metatarsus 1.0, tarsus 0.5. Second patella and tibia 1.3 mm, third 0.8, fourth 1.2.

*Variation.* Total length of females 3.0 to 3.5 mm, of males 2.3 to 3.1.

*Diagnosis.* The markings on the abdomen (Fig. 408) are shared only with *A. pratensis* (Emerton) (Levi, 1973: 492, figs. 21–31) of the eastern United States and *A. mazamitla* and *A. tepic* (Fig. 412). Females of *A. flavus* are distinguished from these by the stalked scape (Fig. 404); males have a longer embolus than *A. mazamitla* (Fig. 403) has, originating from near the middle of the bulb (Fig. 409).

*Distribution.* Pacific coast from Chiapas, Mexico, to Nicaragua (Map 5).

*Records.* MEXICO “Managna” [?Managua, Nicaragua], ♀ (MCZ). *Morelos*: 19 km E Cuernavaca, 15 Aug. 1954, ♀ (R. Dreisbach, MCZ). *Chiapas*: Escuintla, 4♀, 2♂ (Crawford, MCZ); La Zacualpa, Aug. 1909, 2♀, 9♂, 7 imm. (A. Petrunkevitch, AMNH); Tonalá, Aug. 1909, ♀ (A. Petrunkevitch, AMNH); Arriaga, N Arriaga Mts., 2 Sept. 1947, ♂ (H. Wagner, AMNH). GUATEMALA Tiquisate, 60 m, 26–29 June 1947, ♂ (C., P. Vaurie, AMNH). NICARAGUA San Marcos, 2♀ (C. F. Baker, MCZ); Volcán Cosiguina, 25 Aug. 1989, ♂ (F. Reinboldt, JMM); Isla de Ometepe, July 1989, ♀ (F. Reinboldt, JMM).

*Araneus tepic* new species  
 Figures 410–413; Map 5

*Holotype.* Female from 24 km N of Tepic, Nayarit, Mexico, 25 July 1954 (W. J. Gertsch), in AMNH. The specific name is a noun in apposition after the type locality.

*Description.* Female. Carapace orange with a minute dusky spot on each side of head. Sternum and legs orange. Dorsum of abdomen black with three white lines (Fig. 412). Venter black with two white patches on each side (Fig. 413). Posterior median eyes 1.7 diameters of anterior medians, lateral eyes 1.1 diameters. Anterior medians 1.2 diameters apart, 2.5 from laterals. Posterior medians 0.3 diameter apart, 2.5 from laterals. Abdomen oval (Fig. 412). Total length 3.6 mm. Carapace 1.3 mm long, 1.1 wide. First femur 1.2 mm, patella and tibia 1.3, metatarsus 0.8, tarsus 0.4. Second patella and tibia 1.1 mm, third 0.8, fourth 1.2.

*Diagnosis.* This female differs from *A. flavus* (Figs. 404–407) and *A. mazamitla* (Figs. 400–401) by having the scape of the epigynum short and wide, widest at its attachment (Fig. 410).

*Araneus montereyensis* (Archer)  
Map 5

*Conaranaea montereyensis* Archer, 1951b: 8, figs. 8, 24, 25, ♀, ♂. Female holotype from Monterey, California, in AMNH.

*Araneus montereyensis*:—Levi, 1973: 506, figs. 108, 109, 138, 151, map 3.

*Diagnosis.* The female has a straight scape with the openings anterior on each side of the scape as in *A. adjuntaensis* (Fig. 414), but posteriorly the plates are fused into one narrow transverse sclerite (Levi, 1973, figs. 139, 141). The male differs from other species by having the long median apophysis spine directed anteromesally, the frayed end directed anterolaterally (Levi, 1973, figs. 145, 146).

*Distribution.* California.

*Record.* MEXICO *Baja California Norte*: 23 km SE Maneadero, 19 May 1965, ♀ (D. Q. Cavagnero, E. S. Ross, CAS).

*Araneus adjuntaensis* (Petrunkevitch)  
Figures 414–417; Map 5

*Meta adjuntaensis* Petrunkevitch, 1930: 349: figs. 232–234, ♀. Female holotype from Adjuntas, Puerto Rico, collected by sweeping virgin forest, in AMNH, examined. Roewer, 1942: 918.

*Description.* Female. Carapace orange with black marks (Fig. 416). Chelicerae, labium, endites orange. Sternum black on sides with an orange band in middle. Legs light orange with narrow black rings. Dorsum of abdomen black, gray and white spotted (Fig. 416); venter with black band, white on each side (Fig. 417). Posterior median eyes 0.8 diameter of anterior medians, laterals 0.7 diameter. Anterior median eyes 1 diameter apart, 1 from laterals. Posterior median eyes 0.3 diameter apart, 1.3 from laterals. Abdomen damaged. Total length 3.4 mm. Carapace 1.2 mm long, 1.1 wide. First femur 1.7 mm, patella and tibia 1.9, metatarsus 1.3, tarsus 0.7. Second

patella and tibia 1.7 mm, third 1.0, fourth 1.5.

*Diagnosis.* This species differs from *A. miniatus* (Levi, 1973: 506, figs. 158–171) found in the southeastern United States by having the oval abdomen longer than wide (Fig. 416) (the abdomen of *A. miniatus* is wider than long). *Araneus adjuntaensis* also has a shorter scape in the epigynum (Fig. 414). In posterior view of the epigynum, the ducts, which show through the sclerites, take a ventral-posterior course (Fig. 415), while those of *A. miniatus* loop in a transverse direction.

*Record.* PUERTO RICO Toro Negro State Forest, 7 Nov. 1971, ♀ (J. E. Carico, MCZ).

*Araneus caballo* new species  
Figures 418–421; Map 5

*Holotype.* Female holotype from 11 km SW of Filo de Caballo, Guerrero, Mexico, 12 July 1985 (J. Woolley, G. Zolnerowich), in MCZ. The specific name is a noun in apposition after the type locality.

*Description.* Female. Carapace light orange with some dark hairs on head. Chelicerae, labium, endites orange. Sternum orange, border dusky. Coxae orange; legs light orange. Dorsum of abdomen white with indistinct paired dark marks (Fig. 420); venter with two longitudinal rectangles on dusky background (Fig. 421). Posterior median eyes 2 diameters of anterior medians, laterals same diameter as anterior medians. Anterior median eyes 2.2 diameters apart, 3.7 from laterals. Posterior median eyes 2 diameters apart, 3 from laterals. Abdomen slightly longer than wide with a pair of rounded humps (Fig. 420). Total length 3.1 mm. Carapace 1.5 mm long, 1.1 wide. First femur 1.7 mm, patella and tibia 2.1, metatarsus 1.2, tarsus 0.5. Second patella and tibia 1.7 mm, third 0.9, fourth 1.5.

*Diagnosis.* This species differs from *A. montereyensis* (Levi, 1973: 506, figs. 108, 109, 138, 151) and *A. adjuntaensis* (Figs. 414, 415) by lacking the anterior openings on the base of the epigynum (Fig. 418)

and in the shape of the base in posterior view (Fig. 419).

*Araneus ubicki* new species  
Figures 422–426; Map 5

*Holotype.* Female holotype and one female and one male paratypes from Monteverde, Res. Bosque Nuboso, 1700 m, cloud forest, Puntarenas Prov., Costa Rica, 1–4 Apr. 1983 (D. Ubick), in CAS. This species is named after the collector.

*Description.* Female. Carapace, chelicerae, labium, endites orange. Sternum dark orange. Coxae orange; legs orange, slightly dusky underneath. Dorsum of abdomen with black marks, a median white pigment stripe, and white pigment on sides (Fig. 424). Venter orange between epigynum and spinnerets, light on sides; sides of abdomen gray (Fig. 425). Posterior median eyes 1.5 diameters of anterior medians, laterals 0.8 diameter. Anterior median eyes 1.4 diameters apart, 2.5 from laterals. Posterior median eyes their diameter apart, 2.5 from laterals. Abdomen oval with indistinct humps (Fig. 424). Total length 3.4 mm. Carapace 1.4 mm long, 1.2 wide. First femur 1.5 mm, patella and tibia 1.8, metatarsus 1.1, tarsus 0.6. Second patella and tibia 1.4 mm, third 0.9, fourth 1.3.

Male. Color as in female but abdomen lacks white. Posterior median eyes 1.8 diameters of anterior medians, anterior laterals 1.2 diameters, posterior laterals 1. Anterior median eyes 1.5 diameters apart, 2 from laterals. Posterior median eyes 0.9

diameter apart, 2 from laterals. Endite with tooth. First coxa without hook. First tibia thicker than second, with some long macrosetae. Abdomen oval. Total length 2.6 mm. Carapace 1.2 mm long, 1.1 wide. First femur 1.5 mm, patella and tibia 1.8, metatarsus 1.1, tarsus 0.6. Second patella and tibia 1.4 mm, third 0.8, fourth 1.1.

*Diagnosis.* The female is distinguished from other species by the epigynum, in which connecting duct loops show in the base on each side of the scape (Figs. 422, 423). The male differs by having the palpal embolus long and slightly curved, and by the presence of a small knob on the median apophysis (Fig. 426).

*Araneus musawas* new species  
Figures 427, 428; Map 5

*Holotype.* Male from Musawas, Waspuc River [Río Huaspuc], Nicaragua, 30 Sept. 1955 (B. Malkin), in AMNH. The specific name is a noun in apposition after the type locality.

*Description.* Male. Carapace, sternum and legs orange, sternum slightly dusky. Dorsum of abdomen dusky with a white cardiac mark (Fig. 428); venter dusky. Posterior median eyes 0.7 diameter of anterior medians, lateral eyes 0.6 diameter. Anterior median eyes a little less than their diameter apart, the same from laterals. Posterior median eyes 0.6 diameter apart, 2.5 from laterals. Endite with tooth. First coxa without hook. Legs slender; second

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Figures 414–417. *Araneus adjuntaensis* (Petrunkevitch), female. 414. Epigynum, ventral. 415. Epigynum, posterior. 416. Dorsal. 417. Abdomen, ventral.

Figures 418–421. *A. caballo* n. sp., female. 418. Epigynum, ventral. 419. Epigynum, posterior. 420. Dorsal. 421. Abdomen, ventral.

Figures 422–426. *A. ubicki* n. sp. 422–425. Female. 422. Epigynum, ventral. 423. Epigynum, posterior. 424. Dorsal. 425. Abdomen, ventral. 426. Male, left palpus.

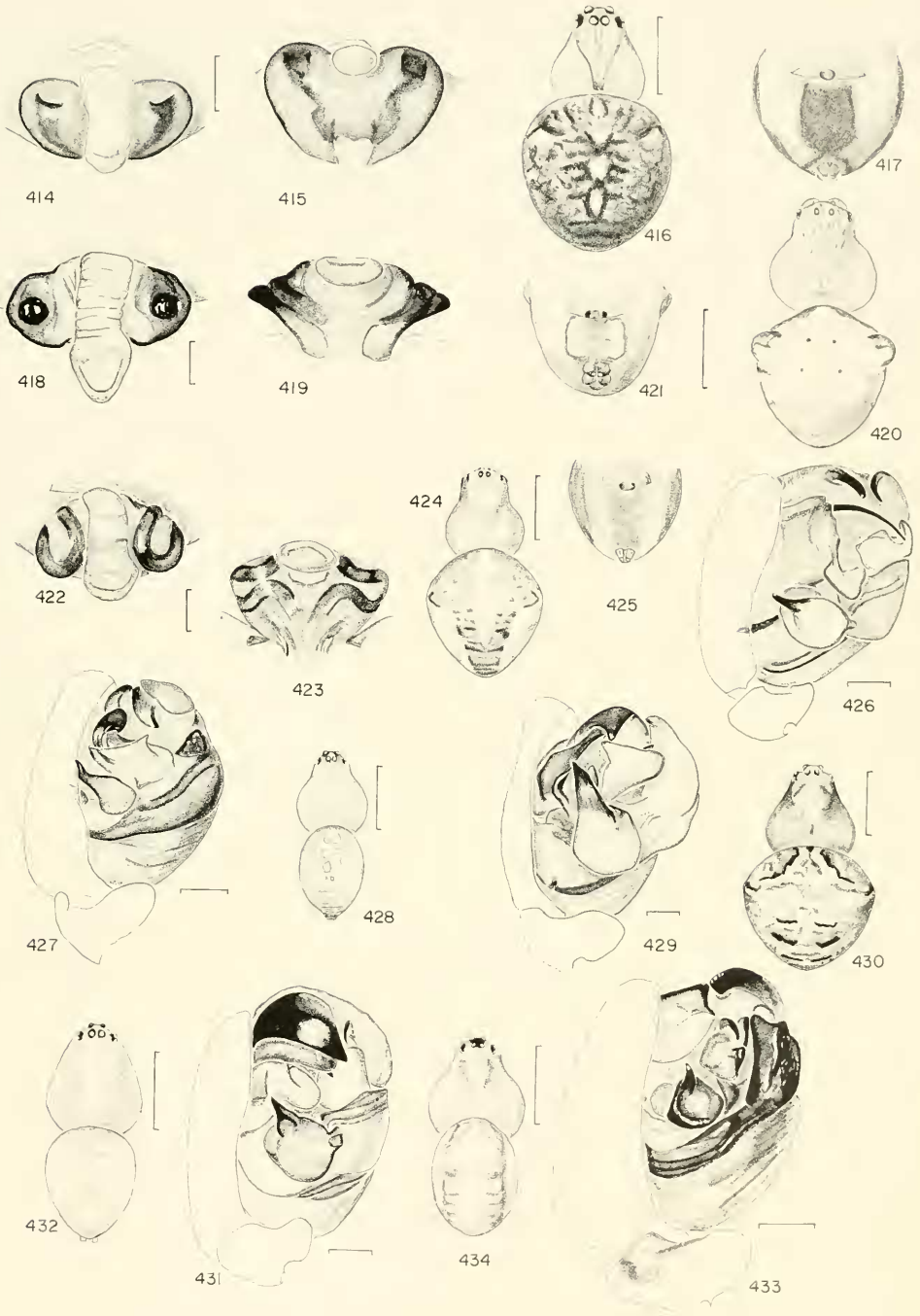
Figures 427, 428. *A. musawas* n. sp., male. 427. Palpus. 428. Dorsal.

Figures 429, 430. *A. frio* n. sp., male. 429. Palpus. 430. Dorsal.

Figures 431, 432. *A. nuboso* n. sp., male. 431. Palpus. 432. Dorsal.

Figures 433, 434. *A. uruapan* n. sp., male. 433. Palpus. 434. Dorsal.

*Scale lines.* 1.0 mm, genitalia 0.1 mm.



tibia thinner than first, first with long macrosetae. Abdomen narrow, oval. Total length 2.5 mm. Carapace 1.4 mm long, 1.2 wide. First femur 1.5 mm, patella and tibia 1.8, metatarsus 1.2, tarsus 0.6. Second patella and tibia 1.5 mm, third 0.9, fourth 1.2.

*Diagnosis.* This male is distinguished by details of the palpus: the conductor almost touches the cymbium, and hides the coiled embolus (Fig. 427). Also, the spine of the median apophysis is drawn out beyond the edge of the cymbium (Fig. 427).

*Araneus frio* new species  
Figures 429, 430; Map 5

*Holotype.* Male from W of Río Frio, 3200 m, Distrito Federal, Mexico, 22 Aug. 1964 (J., W. Ivie), in AMNH. The specific name is a noun in apposition after the type locality.

*Description.* Male. Head orange, sides dusky to black, carapace dusky orange. Sternum black. Coxae light orange; legs with dusky rings on light orange. Dorsum of abdomen with median white chevron anteriorly, dark transverse bars posteriorly. Venter dark with black spots and a pair of white brackets. Posterior median eyes 1.5 diameters of anterior medians, lateral eyes 0.5 diameter. Anterior median eyes 1.5 diameters apart, 1.4 from laterals. Posterior median eyes a little more than their diameter apart, 1.5 from laterals. Endite with tooth. First coxa without hook. Second tibia as thick as first, not modified. Abdomen with distinct humps (Fig. 430). Total length 3.2 mm. Carapace 1.7 mm long, 1.5 wide. First femur 2.0 mm, patella and tibia 2.4, metatarsus 1.5, tarsus 0.6. Second patella and tibia 2.0 mm, third 1.1, fourth 1.4.

*Diagnosis.* This male is distinguished from others by the large pointed median apophysis and stalked conductor of the palpus (Fig. 429).

*Araneus nuboso* new species  
Figures 431, 432; Map 5

*Holotype.* Male holotype from Monteverde, Res. Bosque Nuboso, 1700 m, cloud forest, Puntarenas Prov.,

Costa Rica, 1–4 Apr. 1983 (D. Ubick), in CAS. The specific name is a noun after the type locality.

*Description.* Male. Carapace yellow-white, a dusky patch on each side of thorax. Chelicerae, labium, endites yellow-white. Sternum light orange. Coxae yellow-white; legs yellow-white, distal articles orange. Dorsum of abdomen with white pigment spots (Fig. 432); venter yellowish without pigment. Posterior median eyes 1.5 diameters of anterior medians, anterior laterals 1.2 diameter, posterior laterals 1. Anterior median eyes 1.4 diameters apart, 1.6 from laterals. Posterior median eyes 1 diameter apart, slightly more than 2 from laterals. Endite with tooth. First coxa without hook. Second tibia thinner than first; first with some long macrosetae. Abdomen oval. Total length 2.7 mm. Carapace 1.4 mm long, 1.2 wide. First femur 1.5 mm, patella and tibia 1.7, metatarsus 1.0, tarsus 0.5. Second patella and tibia 1.5 mm, third 0.8, fourth 1.2.

*Diagnosis.* The embolus is long and filamentous. Only its tip is visible on the left of the conductor. On top of the conductor hangs a spine attached to the terminal apophysis (Fig. 431).

*Araneus uruapan* new species  
Figures 433, 434; Map 5

*Holotype.* Male holotype and one male paratype from 16 km S of Uruapan, Michoacan, Mexico, 6 July 1985 (J. Woolley and G. Zolnerowich), in MCZ. The specific name is a noun in apposition after the type locality.

*Description.* Male. Carapace light orange, dusky on sides of head. Chelicerae, labium, endites orange. Sternum dusky orange. Coxae light orange; legs orange. Dorsum of abdomen with longitudinal dusky line on each side and lines connected by broken transverse bars (Fig. 434); venter dusky. Posterior median eyes 1.3 diameters of anterior medians, laterals same diameter as anterior medians. Anterior median eyes 1.2 diameters apart, 1.3 from laterals. Posterior median eyes 1 diameter apart, 2.5 from laterals. Endite with large

tooth facing large tooth on palpal femur. First coxa without hook. Second tibia thinner than first. Abdomen oval, equally rounded anteriorly and posteriorly (Fig. 434). Total length 2.5 mm. Carapace 1.3 mm long, 1.1 wide. First femur 1.3 mm, patella and tibia 1.5, metatarsus 0.9, tarsus 0.5. Second patella and tibia 1.3 mm, third 0.9, fourth 1.2.

*Diagnosis.* The male differs by having the tip of the embolus overhanging the "top" of the conductor, and by having a round median apophysis with an apical spine (Fig. 433).

*Araneus cristobal* new species

Figures 435–439; Map 5

*Holotype.* Female holotype and female and male paratypes from Grutas de San Cristóbal, ca. 16 km SE of San Cristóbal, Chiapas, Mexico on Hwy. 190, 27 July 1983, in pine forest (W. Maddison), in MCZ. The specific name is a noun in apposition after the type locality.

*Description.* Female. Head mottled brown, sides of thorax lighter. Sternum dark brown. Coxae light; legs mottled brown, ringed. Dorsum of abdomen with folium, brown-black with symmetrical white spots and white lines (Fig. 437); venter black with white line on each side, sides brown (Fig. 438). Eyes small and subequal. Anterior median eyes 2 diameters apart, 2.5 from laterals. Posterior median eyes 1.2 diameters apart, 3.5 from laterals. Abdomen diamond-shaped. Total length 4.2 mm. Carapace 1.8 mm long, 1.5 wide. First femur 1.7 mm, patella and tibia 2.2, metatarsus 1.3, tarsus 0.5. Second patella and tibia 1.8 mm, third 1.1, fourth 1.6.

Male. Color as in female, but lighter than female illustrated. Posterior median and lateral eyes 0.6 diameter of anterior medians. Anterior median eyes their diameter apart, 1.3 from laterals. Posterior median eyes 1.5 diameters apart, 2.5 from laterals. Endite with tooth. First coxa without hook. First tibia with macrosetae. Second tibia as thick as first. Total length 3.2 mm. Carapace 1.6 mm long, 1.4 wide. First femur 2.0 mm, patella and tibia

tarsus 1.3, tarsus 0.7. Second patella and tibia 1.9 mm, third 0.9, fourth 1.4.

*Note.* Some female paratypes are lighter colored; one of them in the AMNH is dark and has a slightly longer, slightly twisted, and narrower scape.

*Diagnosis.* The female is distinguished by having an opening in the base on each side of the short stubby scape (Fig. 435), and by the shape of the median and lateral plates (Fig. 436). The male is distinguished by the curved embolus originating from the "top" of the bulb (Fig. 439).

*Natural History.* Specimens have been collected in oak-pine woodland and on roadside bushes.

*Paratypes.* MEXICO *Oaxaca:* 23 km SW Valle Nacional, Hwy. 175, 1000 m, 25 June 1983, ♂ (W. Maddison, R. S. Anderson, MCZ). *Chiapas:* 5 km W San Cristóbal de Las Casas, Hwy. 190, 2300 m, 16°44'N, 92°41'W, 27–28 July 1983, ♂ (W. Maddison, R. S. Anderson, MCZ); San Cristóbal de Las Casas, 12 July 1950, ♀ (C., M. Goodnight, L. Stannard, AMNH).

*Araneus axacus* new species

Figures 440–444; Map 5

*Holotype.* Female holotype and male and female paratypes from 60 km SW of Valle Nacional on Hwy. 175 near 17.5°N, 96.5°W, 2800 m, Oaxaca, Mexico, 3 Aug. 1983, powerline clearing (W. Maddison), in MCZ. The specific name is an arbitrary combination of letters.

*Description.* Female. Carapace and sternum orange-brown, sides of head darker. Sternum orange-brown. Coxae yellowish; legs orange-brown. Folium on dorsum of abdomen black posteriorly, outlined by white, with a median white band on brown (Fig. 442); venter black, framed by two parallel white bands edged laterally with brown (Fig. 443). Carapace hirsute. Eyes small and subequal. Anterior median eyes 1.2 diameters apart, a little less than 2 from laterals. Posterior median eyes their diameter apart, 2.2 from laterals. Abdomen with large humps. Total length 4.8 mm. Carapace 2.2 mm long, 1.8 wide. First femur 2.1 mm, patella and tibia

2.5, metatarsus 1.3, tarsus 0.8. Second patella and tibia 2.3 mm, third 1.2, fourth 1.9.

Male. Coloration as in female, except legs indistinctly ringed. Eyes small and subequal. Anterior median eyes 1.2 diameters apart, 1.5 from laterals. Posterior median eyes a little more than 1 diameter apart, 2.2 from laterals. Endite with tooth. First coxa without hook. Second tibia thinner than first. Abdomen narrower than in female but with similar large humps. Total length 4.2 mm. Carapace 2.2 mm long, 1.7 wide. First femur 2.5 mm, patella and tibia 3.0, metatarsus 1.8, tarsus 0.8. Second patella and tibia 2.5 mm, third 1.3, fourth 2.0.

*Variation.* The epigynum of the female paratype has the scape more slender than that of the holotype illustrated, and curved back on itself at its base.

*Diagnosis.* The female differs from that of *A. cristobal* (Figs. 435, 436) by having the median plate of the epigynum extend ventrally and posteriorly (Figs. 440, 441). The male differs from *A. cristobal* by having a short curved embolus visible behind the spine of the median apophysis (Fig. 444).

### *Araneus cochise* Levi

Figures 445–448; Map 5

*Araneus cochise* Levi, 1973: 497, figs. 55–59, ♀. Female holotype from Southwest Research Station, 1800 m, Chiricahua Mts., Arizona, in AMNH. Brignoli, 1983: 261. Dean, Agnew, and Breene, 1989: 125, figs. 1, 2, ♂.

*Description.* Female from Zacatecas, Mexico. Carapace light orange, dusky on each side of head. Chelicerae, labium, endites brown. Sternum brown with a light patch anteriorly. Coxae light orange; legs light orange with narrow dusky rings. Dorsum of abdomen covered by white pigment spots and dusky areas, a dark spotty folium posteriorly (Fig. 447). Venter dusky between epigynum and spinnerets, with a white narrow band on each side of dusky area, bordered by a fine dusky line. Posterior median eyes 1.2 diameters of anterior medians, anterior laterals 0.8 diameter, posterior laterals 0.6. Anterior median eyes their diameter apart, 2 from laterals. Posterior median eyes 0.8 their diameter apart, 2.2 from laterals. Abdomen wider than long with distinct, rounded humps. Total length 4.7 mm. Carapace 1.8 mm long, 1.5 wide. First femur 1.9 mm, patella and tibia 2.1, metatarsus 1.2, tarsus 0.5. Second patella and tibia 1.9 mm, third 1.1, fourth 1.6.

Male from Texas. Coloration light yellowish as in female. Posterior median eyes 0.8 diameter of anterior medians, anterior laterals 0.8 diameter, posterior laterals 0.7. Anterior median eyes 1.2 diameters apart, 1.2 from laterals. Posterior median eyes their diameter apart, 2 from laterals. Endite with tooth. First coxa without hook. First tibia thicker than second with some long macrosetae. Abdomen oval. Total length 2.9 mm. Carapace 1.6 mm long, 1.5 wide. First femur 1.7 mm, patella and tibia

Figures 435–439. *Araneus cristobal* n. sp. 435–438. Female. 435. Epigynum, ventral. 436. Epigynum, posterior. 437. Dorsal. 438. Abdomen, ventral. 439. Male, left palpus.

Figures 440–444. *A. axacus* n. sp. 440–443. Female. 440. Epigynum, ventral. 441. Epigynum, posterior. 442. Dorsal. 443. Abdomen, ventral. 444. Male palpus.

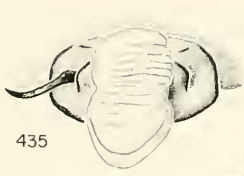
Figures 445–448. *A. cochise* Levi. 445, 446. Female. 445. Epigynum, ventral. 446. Epigynum, posterior. 447. Dorsal. 448. Male palpus.

Figures 449–452. *A. dreisbachi* n. sp. 449–451. Female. 449. Epigynum, ventral. 450. Epigynum, posterior. 451. Dorsal. 452. Male palpus.

Figures 453–456. *A. desierto* n. sp. 453–455. Female. 453. Epigynum, ventral. 454. Epigynum, posterior. 455. Dorsal. 456. Male palpus.

*Scale lines.* 1.0 mm, genitalia 0.1 mm.





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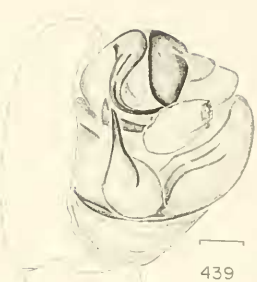
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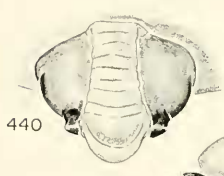
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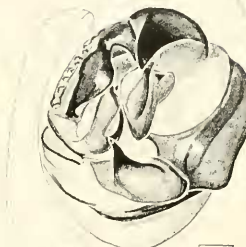
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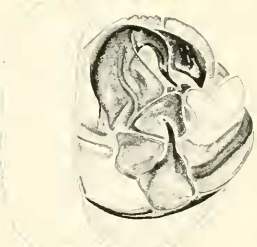
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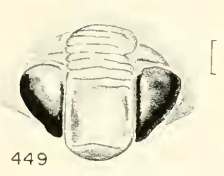
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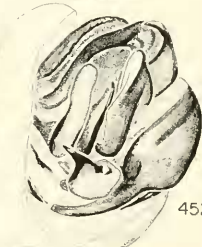
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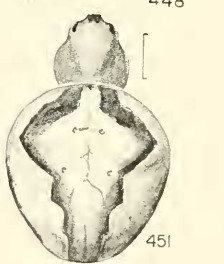
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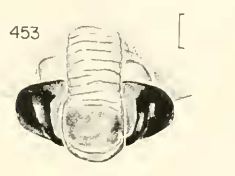
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1.9, metatarsus 1.3, tarsus 0.6. Second patella and tibia 1.7 mm, third 0.9, fourth 1.3.

*Variation.* Total length of females 3.4 to 4.5 mm.

*Diagnosis.* The female differs from other species by having a pair of heavily sclerotized spheres, one on each side of the scape of the epigynum (Fig. 445). The abdomen has rounded humps (Fig. 447). The male has only one long spine on the median apophysis and the embolus makes a clockwise loop (in the left palp), the duct showing through its thicker base (Fig. 448).

*Natural History.* Females were collected by beating *Acacia* trees in Zacatecas.

*Distribution.* From Arizona, Texas to Zacatecas, Mexico (Map 5).

*Additional Records.* TEXAS (Dean et al., 1989). MEXICO *Chihuahua*: 8 km E Parral, 15 July 1947, ♀ (W. J. Gertsch, AMNH). *Durango*: Palos Colorados, 5 Aug. 1947, 2♀ (W. J. Gertsch, AMNH); El Tásate, 27 July 1947, 4♀ (W. J. Gertsch, AMNH). *Zacatecas*: 11 km SE Salinas, on Hwy. 49, 2160 m, 22°34'N, 101°39'W, 8 Aug. 1983, 2 ♀ (W. Maddison, MCZ).

*Araneus dreisbachi* new species

Figures 449–452; Map 5

*Holotype.* Female holotype and two male paratypes from Volcán Popocatepetl, 3800 m, Est. México, Mexico (R. Dreisbach), in MCZ. The species is named after the collector.

*Description.* Female. Carapace, sternum, and legs orange-brown. Coxae orange. Dorsum of abdomen contrastingly marked with folium (Fig. 451); venter blackish with pair of longitudinal lines consisting of white pigment spots. Eyes subequal. Anterior median eyes 2 diameters apart, 2.2 from laterals. Posterior medians their diameter apart, 3 from laterals. Abdomen oval, with slight shoulder humps (Fig. 451). Total length 5.6 mm. Carapace 2.2 mm long, 1.9 wide. First femur 2.1 mm, patella and tibia 2.6, metatarsus 1.6, tarsus 0.8. Second patella and tibia 2.3 mm, third 1.3, fourth 2.0.

Male. Color as in female. Posterior me-

dian and lateral eyes 0.9 diameter of anterior medians. Anterior median eyes 1.5 diameters apart, 1.7 from laterals. Posterior median eyes their diameter apart, a little over 2 from laterals. Endite with tooth. First coxa without hook. Second tibia thinner than first. Total length 3.8 mm. Carapace 2.1 mm long, 1.7 wide. First femur 2.5 mm, patella and tibia 2.9, metatarsus 1.7, tarsus 0.8. Second patella and tibia 2.4 mm, third 1.3, fourth 1.9.

*Note.* The male collected with the holotype has the embolus torn out.

*Variation.* Total length of females 5.6 to 5.8 mm, of males 3.8 to 4.0.

*Diagnosis.* The female is distinguished from *A. desierto* (Figs. 453, 454) by the shape of the posterior median plate of the epigynum (Fig. 450). The male is distinguished from *A. desierto* (Fig. 456) by the larger terminal apophysis (Fig. 452).

*Paratypes.* MEXICO *México*: Parque Nac. Zoquiapan, 3200 m, Aug. 1986, ♀ (W. Eberhard FN8-32, MCZ). *Distrito Federal*: 3.2 km W Río Frío, 3200 m, 24 July 1956 (W. Gertsch, V. Roth, AMNH).

*Araneus desierto* new species

Figures 453–456; Map 5

*Holotype.* Female holotype and male paratype from Desierto de los Leones, Distrito Federal, Mexico, 26 May 1946 (J. C., D. L. Pallister), in AMNH. The specific name is a noun in apposition after the type locality.

*Description.* Female. Carapace orange, dusky on sides of head and thorax. Sternum dark brown. Coxae light orange; legs orange with dusky rings. Dorsum of abdomen with a white transverse line from hump to hump, an indistinct folium posteriorly (Fig. 455). Venter dusky with a white line on each side, dusky white on sides of venter. Posterior median eyes 1.5 diameters of anterior medians, anterior lateral eyes same diameter as anterior medians, posterior laterals 0.8 diameter. Anterior median eyes 1.5 their diameter apart, 2.5 from laterals. Posterior median eyes their diameter apart, 2.5 from laterals. Abdomen slightly longer than wide, with

humps (Fig. 455). Total length 3.8 mm. Carapace 1.8 mm long, 1.4 wide. First femur 1.9 mm, patella and tibia 2.2, metatarsus 1.2, tarsus 0.6. Second patella and tibia 1.9 mm, third 1.1, fourth 1.5.

Male. Carapace as in female. Dorsum of abdomen with paired white spots near anterior edge, no transverse white line, folium as in female, outlined by light line. Posterior median eyes 1.5 diameters of anterior medians, anterior lateral eyes 0.8 diameter, posterior laterals same diameter as anterior medians. Anterior median eyes 1.5 diameters apart, 1.5 from laterals. Posterior median eyes their diameter apart, 1.7 from laterals. Endite with tooth. First coxa without hook. Second tibia thinner than first. Abdomen as wide as long, with indistinct humps. Total length 3.3 mm. Carapace 1.5 mm long, 1.4 wide. First femur 2.0 mm, patella and tibia 2.5, metatarsus 1.3, tarsus 0.6. Second patella and tibia 2.2 mm, third 1.1, fourth 1.6.

*Diagnosis.* The female is distinguished from *A. dreisbachi* (Figs. 449, 450) by a longer scape (Fig. 453) and by a T-shaped median plate in posterior view (Fig. 454). The male is distinguished by a longer spine on the median apophysis (Fig. 456) than that of *A. dreisbachi* (Fig. 452) and by a differently shaped terminal apophysis.

### *Araneus leones* new species

Figures 457–461; Map 5

*Holotype.* Female holotype, male paratype from Desierto de los Leones, Distrito Federal, Mexico, 5 Aug. 1946 (C. Goodnight, Bolivar, and Bonet), in AMNH. The specific name is a noun in apposition after the type locality.

*Description.* Female. Carapace maculated orange, sides of head dusky. Sternum black. Coxae light orange; legs ringed black and dark orange. Dorsum of abdomen blackish brown with white folium outline and median white mark (Fig. 459); venter black with a white line on each side (Fig. 460). Posterior median eyes 1.3 diameters of anterior medians, lateral eyes same diameter as anterior medians. Anterior median eyes 1.2 diameters apart, 2 from lat-

erals. Posterior median eyes 0.8 diameter apart, 2.5 from laterals. Abdomen slightly longer than wide, with humps (Fig. 459). Total length 4.5 mm. Carapace 1.9 mm long, 1.6 wide. First femur 2.1 mm, patella and tibia 2.7, metatarsus 1.5, tarsus 0.7. Second patella and tibia 2.3 mm, third 1.1, fourth 1.9.

Male. Coloration as in female, but without median white streak on abdomen. Posterior median eyes 1.2 diameters of anterior medians. Lateral eyes 0.9 diameter. Anterior medians 1.5 diameters apart, 1.5 from laterals. Posterior median eyes a little more than their diameter apart, 2.2 from laterals. First coxa without hook. Abdomen slightly wider than long. First and second tibiae of equal thickness. Total length 3.6 mm. Carapace 2.0 mm long, 1.6 wide. First femur 2.3 mm, patella and tibia 2.9, metatarsus 1.8, tarsus 0.8. Second patella and tibia 2.3 mm, third 1.3, fourth 1.9.

*Variation.* Total length of females 4.0 to 4.5 mm, of males 3.6 to 3.8. The markings on the abdomen are variable. The scape varies in length, but all have two twists. Five females had the scape coiled one way, three the other way, and one had the scape torn off.

*Diagnosis.* The female differs from females of most species by the coiled scape, and by the median posterior projection of the base of the epigynum (Figs. 457, 458). It differs from the female of *A. salto* (Figs. 462, 463) by the raised round edge on each side of the scape in ventral view (Fig. 457). The indistinct openings lie posteriorly on the circle formed by the edge (Fig. 457). The male differs by the large median apophysis, which is long and drawn out parallel to the cymbium, and is frayed at the other end (Fig. 461). The terminal apophysis, embolus and conductor are shaped differently than those of *A. popago* (Fig. 469).

*Records.* MEXICO *Distrito Federal:* Desierto de los Leones, June 1955, 5♀; 20 Nov. 1961, ♀; June 1965, 2♀ (N. L. H. Kraus, AMNH); 26 May 1946, 8♀, 5♂; 12 June 1946, ♀ (J. C., D. L. Pallister, AMNH).

*Araneus salto* new species  
Figures 462–465; Map 5

*Holotype.* Female holotype and one female paratype from 16 km W of El Salto, Durango, Mexico (J. E. H. Martin), in CNC. The specific name is a noun in apposition after the type locality.

*Description.* Female holotype. Carapace dusky orange, darker dusky on sides; lightest in ocular quadrangle. Chelicerae dark orange with a dusky patch. Labium, endites dusky. Sternum dark dusky to black. Coxae light orange; legs light orange with narrow rings. Dorsum of abdomen has outline of folium brownish with symmetrical white areas anteriorly and posteriorly on sides (Fig. 464). Venter black between epigynum and spinnerets, a white band on each side (Fig. 465). Posterior median eyes 1.2 diameters of anterior medians, laterals 0.9 diameter. Anterior median eyes 1.2 diameters apart, 1.6 from laterals. Posterior median eyes 1.1 diameters apart, 2 from laterals. Abdomen as long as wide, with large humps (Fig. 464). Total length 4.3 mm. Carapace 2.0 mm long, 1.5 wide. First femur 2.0 mm, patella and tibia 2.5, metatarsus 1.6, tarsus 0.7. Second patella and tibia 2.1 mm, third 1.1, fourth 1.6.

*Variation.* The paratype illustrated (Fig. 464) has a much darker abdomen than the holotype, and its abdomen has setae that are lacking on the holotype.

*Diagnosis.* The epigynum of *A. salto* has a depression with the openings on each side of the scape in ventral view (Fig. 462); it lacks the round ridges of *A. leones* (Fig. 457). The median plate has two black patches some distance from the edge (Fig. 463).

*Araneus popaco* new species  
Figures 466–469; Map 5

*Holotype.* Female holotype and male paratype from Volcán Popocatepetl, 3800 m, Est. México, Mexico,

14 Aug. 1954 (R. Dreisbach), in MCZ. The specific name is an arbitrary combination of letters.

*Description.* Female. Carapace brown with light hairs; sternum dark brown. Coxae yellow; legs brown, ringed with black. Dorsum of abdomen brown with a white transverse band behind humps, and a posterior folium (Fig. 468). Venter with a pair of parallel longitudinal lines consisting of white pigment spots; spinnerets black. Posterior median eyes 1.3 diameters of anterior medians, lateral eyes same diameter as anterior medians. Anterior medians 1.5 diameters apart, 1.7 from laterals. Posterior medians their diameter apart, 2 from laterals. Abdomen as wide as long, with a pair of humps. Total length 5.6 mm. Carapace 2.0 mm long, 1.7 wide. First femur 2.1 mm, patella and tibia 2.5, metatarsus 1.5, tarsus 0.7. Second patella and tibia 2.3 mm, third 1.2, fourth 2.0.

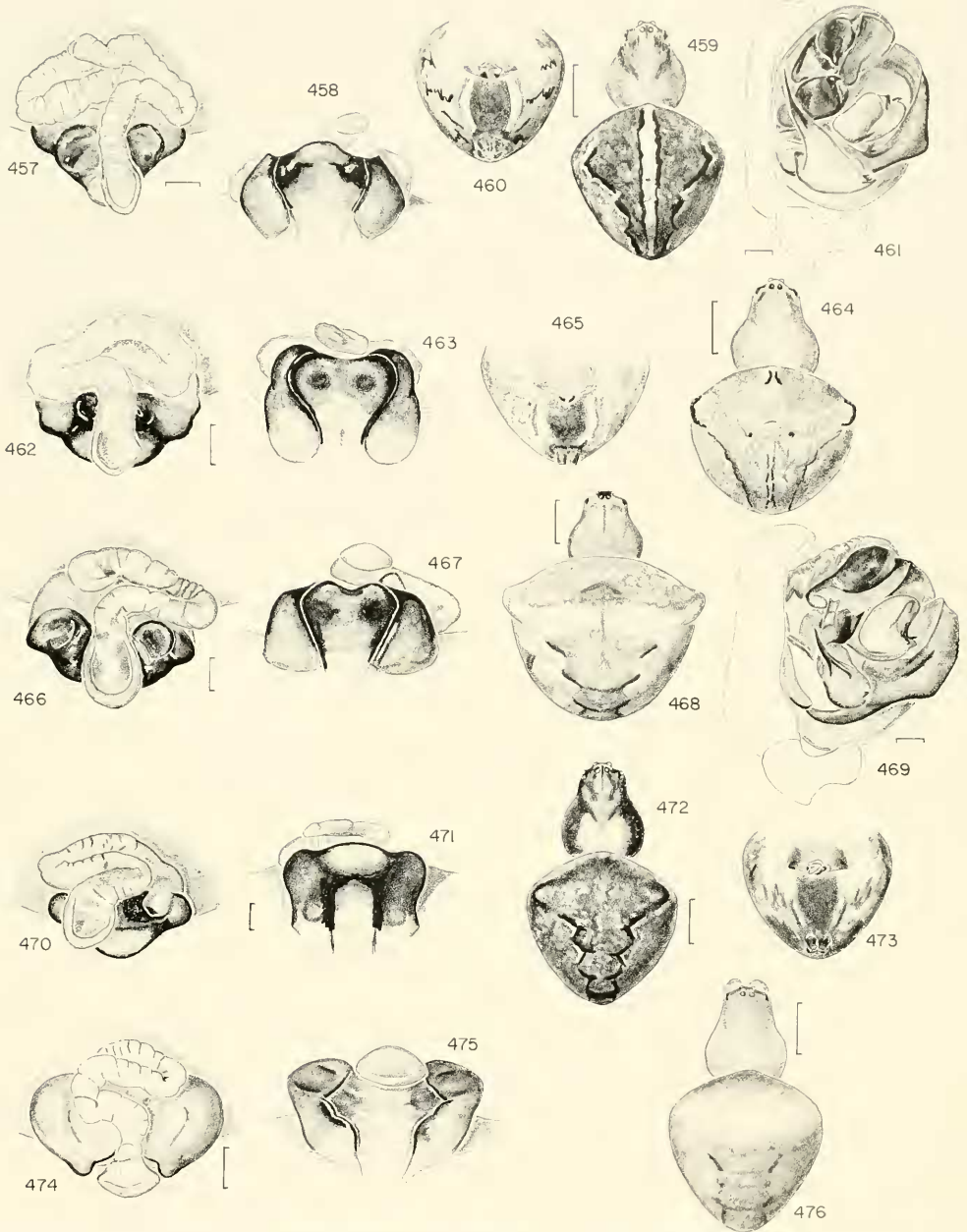
Male from near Río Frío. Color as in female. Posterior median eyes 1.2 diameters of anterior medians, lateral eyes 0.8 diameter. Anterior median eyes 1.3 diameters apart, a little more than their diameter from laterals. Posterior median eyes their diameter apart, a little more than 2 from laterals. Endite with tooth. First coxa without hook. Second tibia slightly thicker than first. Abdomen subspherical, slightly longer than wide, with distinct humps (Fig. 468). Total length 4.2 mm. Carapace 2.0 mm long, 1.8 wide. First femur 2.5 mm, patella and tibia 3.1, metatarsus 1.9, tarsus 0.8. Second patella and tibia 2.5 mm, third 1.4, fourth 2.1.

*Note.* The male might be that of *A. ofrus*.

*Diagnosis.* Female differs from *A. leones* (Figs. 457, 458) by having the scape of the epigynum twisted only once (Fig. 466). The male differs from *A. leones* (Fig. 461) in the shape of the embolus, terminal

Figures 457–461. *Araneus leones* n. sp. 457–460. Female. 457. Epigynum, ventral. 458. Epigynum, posterior. 459. Dorsal. 460. Abdomen, ventral. 461. Male, left palpus.

Figures 462–465. *A. salto* n. sp., female. 462. Epigynum, ventral. 463. Epigynum, posterior. 464. Dorsal. 465. Abdomen, ventral.



Figures 466–469. *A. popaco* n. sp. 466–468. Female. 466. Epigynum, ventral. 467. Epigynum, posterior. 468. Dorsal. 469. Male palpus.

Figures 470–473. *A. quirapan* n. sp., female. 470. Epigynum, ventral. 471. Epigynum, posterior. 472. Dorsal. 473. Abdomen, ventral.

Figures 474–476. *A. nacional* n. sp., female. 474. Epigynum, ventral. 475. Epigynum, posterior. 476. Dorsal.

Scale lines. 1.0 mm, genitalia 0.1 mm.

apophysis conductor, and tegulum (Fig. 469).

*Paratypes*. MEXICO *Distríto Federal*: W Paso de Cortez, 3400 m, 13 Aug. 1954, 2♂ (J. A. Chilcott, CNC); 3 km W Río Frío, 3200 m, 24 July 1956, 2♀, 2♂ (W. J. Gertsch, V. Roth, AMNH). *Michoacan*: Cerro de Tancitaro, 3200 m, July, Aug. 1941, 2♀ (H. Hoogstraal, MCZ).

*Araneus quirapan* new species  
Figures 470–473; Map 5

*Holotype*. Female holotype, female paratype from Zoquiapan in the Parque Nacional Zoquiapan, Est. Mexico, 12 km SW of Río Frío, 3200 m, ca. 19°15'N, 98°24'W. Mexico, in forest dominated by *Abies religiosa* and *Pinus montezumae*, Aug. 1986 (W. Eberhard FN8-32), in MCZ. The specific name is an arbitrary combination of letters.

*Description*. Female. Carapace orange near midline, with a median black line, black on sides, area between median eyes light, light yellowish on posterior slope of thorax (Fig. 472). Labium and endites black with light edges. Sternum black. Coxae yellow-white; legs contrastingly ringed black and yellow-white. Dorsum of abdomen dark brown to black, with outline of folium black (Fig. 472). Venter with a black rectangle between epigynum and spinnerets, light on sides of rectangle (Fig. 473). Eyes subequal. Anterior median eyes their diameter apart, 1.2 from laterals. Posterior medians 0.8 diameter apart, 2.5 from laterals. Abdomen wider than long, with large humps. Total length 5.5 mm. Carapace 2.3 mm long, 1.8 wide. First femur 2.1 mm, patella and tibia 2.7, metatarsus 1.6, tarsus 0.7. Second patella and tibia 2.4 mm, third 1.2, fourth 2.0.

*Diagnosis*. This species has a twisted scape (Fig. 470) with the openings on each side, and median and lateral plates fused ventrally (Fig. 471).

*Natural History*. Eberhard (in letter) reports that the silk of the orb is yellow.

*Araneus nacional* new species  
Figures 474–476; Map 5

*Holotype*. Female from 60 km SW of Valle Nacional, Oaxaca, Mexico, in a power line clearing through

oak-pine forest along Hwy. 175 [near 17.5°N, 96.5°W], 2600 m, 25 June 1983 (W. Maddison), in MCZ. The specific name is a noun in apposition after the type locality.

*Description*. Female. Carapace dark orange, head and clypeus darkest; sternum dusky dark orange. Coxae light orange; legs orange, indistinctly ringed. Dorsum of abdomen dark orange-gray, with outline of folium (Fig. 476); venter dusky with pair of white lines. Posterior median eyes and lateral eyes 1.3 diameters of anterior median eyes. Anterior median eyes 1.6 diameters apart, 2.5 from laterals. Posterior median eyes their diameter apart, 2.5 from laterals. Abdomen as wide as long, with two humps (Fig. 476). Total length 4.7 mm. Carapace 2.1 mm long, 1.5 wide. First femur 2.0 mm, patella and tibia 2.3, metatarsus 1.3, tarsus 0.6. Second patella and tibia 2.0 mm, third 1.1, fourth 1.6.

*Diagnosis*. This species is distinguished from other small species by the pair of tubercles on the posterior margin of the epigynum (Fig. 474) and the shape of the lateral plates in posterior view (Fig. 475).

*Araneus mendoza* new species  
Figures 477–481; Map 5

*Holotype*. Male holotype, one male and one immature male paratypes from Ciudad Mendoza, Veracruz, Mexico, 24 Aug. 1964 (W. Ivie), in AMNH. The specific name is a noun in apposition after the type locality.

*Description*. Female. Carapace dark orange, with white pigment under middle of thorax. Sternum dark, dusky on sides. Coxae light orange; legs dark orange with light rings. Dorsum of abdomen with dark folium on posterior half, sides blackish anteriorly (Fig. 480). Venter black between epigynum and spinnerets, with white line on each side. Posterior median eyes 1.5 diameters of anterior median eyes, lateral eyes same diameter as anterior medians. Anterior median eyes 1.5 diameters apart, 2.5 from laterals. Posterior median eyes their diameter apart, 2.5 from laterals. Abdomen wider than long, with dorsal humps. Total length 3.5 mm. Carapace 1.5 mm

long, 1.3 wide. First femur 1.5 mm, patella and tibia 1.9, metatarsus 1.0, tarsus 0.6. Second patella and tibia 1.6 mm, third 0.9, fourth 1.3.

Male. Carapace darker than in female, dorsum of abdomen with contrasting pattern (Fig. 479). Posterior median eyes 1.2 diameters of anterior medians, anterior lateral eyes 0.7 diameter, posterior lateral eyes 0.9. Anterior median eyes 1.5 diameters apart, 2 from laterals. Posterior median eyes a little more than their diameter apart, 2.2 from laterals. Endite with tooth. First coxa without hook. Second tibia about as thick as first. Abdomen oval, with 2 humps. Total length 3.5 mm. Carapace 1.8 mm long, 1.6 wide. First femur 2.0 mm, patella and tibia 2.4, metatarsus 1.5, tarsus 0.7. Second patella and tibia 2.0 mm, third 1.0, fourth 1.4.

*Variation.* Total length of females 3.4 to 3.5 mm, of males 2.8 to 3.5. Of two females collected in Puebla, one is light colored (Fig. 480), the other dark.

*Diagnosis.* The female of *A. mendoza* differs from other species that have a scape with one twist by having the opening located posteriorly in a ventral fusion of median and lateral plates (Fig. 478). A sword-shaped embolus cap is stuck in each opening (Figs. 478). Males of *A. mendoza* are unlike all other *Araneus* species in having the embolus filament forming a large loop, and its basal plate round (Fig. 481).

*Natural History.* A male was collected in a cloud forest, a female in an oak forest at 2400 m, in Veracruz.

*Distribution.* Puebla and Veracruz States, Mexico (Map 5).

*Paratypes.* MEXICO *Puebla*: Tehuaitlan, 1500 m [?], 9 July 1946, 2♀, ♂ (H. Wagner, AMNH). *Veracruz*: nr. Acultzingo, 2400 m, July 1953, ♀ (C. J. Goodnight, MCZ, ex AMNH); 17.6 km S Misantla, 24 July 1984, ♂ (J. B. Woolley, MCZ).

### *Araneus puebla* new species Figures 482–486; Map 5

*Holotype.* Female holotype and male paratype from Huauchinango, Puebla, Mexico, 7 Oct. 1947 (H.

M. Wagner), in AMNH. The specific name is a noun in apposition after the type locality.

*Description.* Female. Carapace light orange, sides of thorax dusky. Sternum dusky brown. Coxae light orange; legs orange, third and fourth legs with lighter orange rings. Dorsum of abdomen with white anterior triangle and posterior dark folium (Fig. 484). Venter black between epigynum and spinnerets with white mark on each side (Fig. 485). Eyes subequal. Anterior median eyes 1.2 diameters apart, 1.2 from laterals. Posterior medians their diameter apart, 2.2 from laterals. Abdomen with shoulder humps (Fig. 484). Total length 3.2 mm. Carapace 1.6 mm long, 1.3 wide. First femur 1.6 mm, patella and tibia 1.9, metatarsus 1.2, tarsus 0.6. Second patella and tibia 1.6 mm, third 0.9, fourth 1.3.

Male. Color as in female. Posterior median eyes same diameter as anterior medians, anterior laterals 0.9 diameter, posterior laterals 0.7. Anterior medians a little more than their diameter apart, a little less than their diameter from laterals. Posterior medians 0.7 diameter apart, 1.5 from laterals. Endite with tooth. Small tubercle distally on posterior face of fourth coxae. Abdomen oval, longer than wide, widest anteriorly, with indistinct humps. Total length 3.1 mm. Carapace 1.4 mm long, 1.3 wide. First femur 2.1 mm, patella and tibia 2.3, metatarsus 1.5. Second patella and tibia 1.9 mm, third 0.9, fourth 1.4.

*Diagnosis.* The female has a twisted scape (Fig. 482) but differs from others by having the openings posteriorly in a round depression (Fig. 483). The male is distinct in having the filamentous part of the embolus about equal in length to the diameter of its base (Fig. 486).

### *Araneus guerrerensis* Chamberlin and Ivie Figures 487–493; Map 5

*Araneus guerrerensis* Chamberlin and Ivie, 1936: 45, pl. 13, figs. 117–118, ♀. Female holotype from Chilapa, Guerrero, Mexico, legs broken off, in ZMB, no. 22022, examined. Roewer, 1942: 844. Bonnet, 1955: 512.

*Araneus chiricahua* Levi, 1973: 496, figs. 44–54, ♀, ♂.

Female holotype from Southwestern Research Station, 8 km W of Portal, Arizona, in MCZ. Brignoli, 1985: 261. NEW SYNONYMY.

**Description.** Female. Carapace orange to dusky orange, lightest in middle of thorax, sides darkest. Sternum brown with anterior small orange spot. Coxae light dusky orange; legs dusky orange. Dorsum of abdomen white and dusky with indistinct folium posteriorly containing transverse bars. Anterior with white chevron (Figs. 491, 492). Venter between epigynum and spinnerets dusky, sides with dusky white pigment spots. Posterior median eyes 1.5 diameters of anterior medians, lateral eyes same diameter as anterior medians. Anterior medians 2 times their diameter apart, 3 from laterals. Posterior median eyes their diameter apart, 2.5 from laterals. Abdomen spherical, with large humps. Total length 4.3 mm. Carapace 1.8 mm long, 1.4 wide. First femur 1.9 mm, patella and tibia 2.3, metatarsus 1.3, tarsus 0.7. Second patella and tibia 1.9 mm, third 1.1, fourth 1.5.

Male from Morelos. Color as in female. Posterior median eyes 1.4 diameters of anterior medians, anterior lateral eyes 0.8 diameter, posterior laterals 0.9. Anterior medians 1.5 their diameter apart, 2.5 from laterals. Posterior median eyes their diameter apart, 2 from laterals. First coxa without hook. Second tibia slightly thicker than first. Total length 3.4 mm. Carapace 1.7 mm long, 1.4 wide. First femur 1.7 mm, patella and tibia 2.3, metatarsus 1.3, tarsus 0.7. Second patella and tibia 1.7 mm, third 1.2, fourth 1.4.

**Variation.** Total length of females 3.1 to 4.3 mm, of males 2.8 to 3.6.

**Diagnosis.** The epigynum has a twisted scape, the openings, unlike those of related species, are in a slit on each side (Figs. 487, 488). The posterior plates are fused ventrally (Figs. 489, 490). The male, unlike similar species, has the tip of the embolus coiled (Fig. 493).

**Distribution.** Southeastern Arizona to central Mexico (Map 5).

**Additional Records.** MEXICO Durango, 16 km E El Salto, 8 Aug. 1917, ♀, ♂ (W.

J. Gertsch, AMNH). *Distrito Federal*: El Xitle, 12 Oct. 1942, 2♀ (C. Tellez, AMNH); W Río Frío, 22 Aug. 1964, 5♀, 4♂ (J., W. Ivie, AMNH). *México*: Amecameca, 29 Sept. 1957, 2♀, ♂ (R. Dreisbach, MCZ).

*Araneus anguifer* (F. P.-Cambridge)  
Figures 494–496; Map 5

*Aranea anguifera* F. P.-Cambridge, 1904: 514, pl. 49, fig. 14, ♀. Female holotype from Omilteme, 16 km WSW of Chilpancingo, 2600 m, Guerrero, Mexico, in BMNH, examined. Roewer, 1942: 837.

*Araneus anguifer*-Bonnet, 1955: 432.

**Description.** Female. Carapace yellow, sides of thorax darker. Coxae, legs yellow. Dorsum of abdomen with a dark spot on each hump and a small light mark behind, a posterior dorsal dark band (Fig. 496), venter dark gray. Posterior median eyes 2 diameters of anterior medians, laterals 1.3 diameters. Anterior medians 2 diameters apart, 3.5 from laterals. Posterior median eyes their diameter apart, 2.5 from laterals. Abdomen almost as wide as long, with two humps (Fig. 496). Total length 4.5 mm. Carapace 2.4 mm long, 1.6 wide. First femur 2.3 mm, patella and tibia 3.0, metatarsus 2.4, tarsus 0.9. Second patella and tibia 2.6 mm, third 1.3, fourth 2.0.

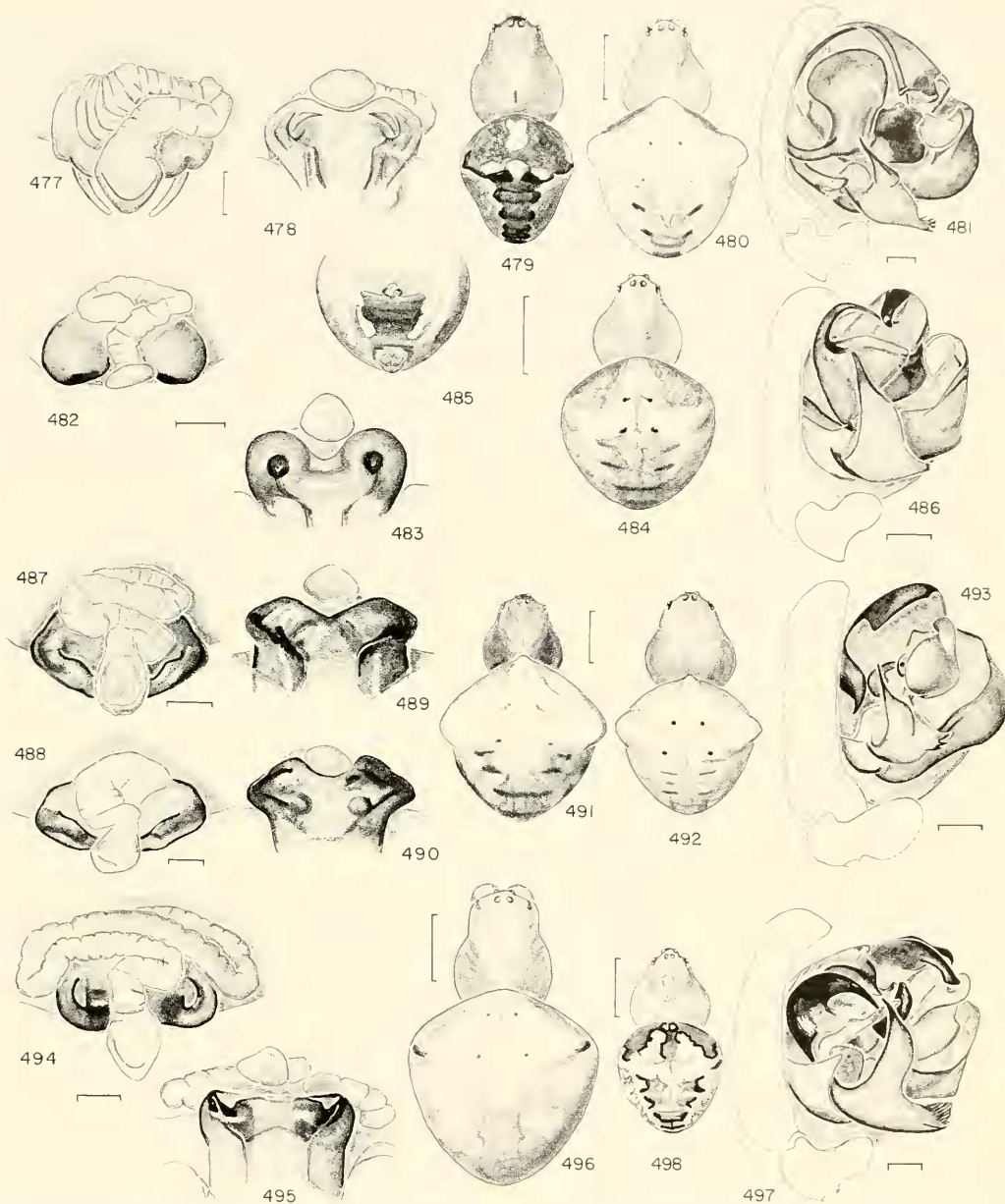
**Diagnosis.** The scape of the epigynum of this species is the longest of all *Araneus* species, and is bent over four times (Fig. 494). There is a notch on each side of the base in ventral view (Fig. 494).

*Araneus huixtla* new species  
Figures 497, 498; Map 5

**Holotype.** Male holotype from 54 km N of Huixtla, 1800 m, Chiapas, Mexico, 26 Feb. 1966 (G. Ball, D. R. Whitehead), in MCZ. The specific name is a noun in apposition after the type locality.

**Description.** Male. Carapace dusky yellowish with white pigment patch in middle. Chelicerae yellowish with dusky patch. Labium, endites dusky. Sternum yellowish, dusky on sides with some white pigment anteriorly. Coxae light orange; legs yellowish with dark dusky rings most distinct on third and fourth legs. Dorsum of abdomen with contrasting folium pattern (Fig. 498); venter black anterior of spin-





Figures 477–481. *Araneus mendoza* n. sp. 457–480. Female. 477. Epigynum, ventral. 478. Epigynum, posterior. 479, 480. Dorsal. 479 (holotype). 480 (paratype). 481. Male, left palpus.

Figures 482–486. *A. puebla* n. sp. 482–485. Female. 482. Epigynum, ventral. 483. Epigynum, posterior. 484. Dorsal. 485. Abdomen, ventral. 486. Male palpus.

Figures 487–493. *A. guerrensis* Chamberlin and Ivie. 487–492. Female. 487, 488. Epigynum, ventral. 489, 490. Epigynum, posterior. 491, 492. Dorsal. 487, 489, 491 (holotype). 488, 490, 492 (Morelos, Mexico). 493. Male palpus.

Figures 494–496. *A. anguifer* (F. P.-Cambridge), female. 494. Epigynum, ventral. 495. Epigynum, posterior. 496. Dorsal.

Figures 497, 498. *A. huixtla* n. sp., male. 497. Palpus. 498. Dorsal.

Scale lines. 1.0 mm, genitalia 0.1 mm.

nerets, with a white bracket on each side. Posterior median eyes 1.2 diameters of anterior medians, laterals same diameter as anterior medians. Anterior median eyes 1.5 diameters apart, 1.5 from laterals. Posterior median eyes slightly less than 1 diameter apart, 2.7 from laterals. Endite with tooth. First coxa without hook. Second tibia same thickness as first. Abdomen oval, with humps (Fig. 498). Total length 3.4 mm. Carapace 1.8 mm long, 1.5 wide. First femur 2.5 mm, patella and tibia 2.9, metatarsus 1.9, tarsus 0.8. Second patella and tibia 2.1 mm, third 1.1, fourth 1.6.

*Diagnosis.* This male differs from others by having a heavy, spine-shaped, curved embolus (Fig. 497).

*Araneus ocaxa* new species  
Figures 499–502; Map 5

*Holotype.* Female holotype, two male paratypes from 60 km SW of Valle Nacional, Oaxaca, Mexico, on Hwy 175, near 17.5°N, 96.5°W, 2600 m, power line clearing through oak-pine forest, 25 June 1983 (W. Maddison), in MCZ. The specific name is an arbitrary combination of letters.

*Description.* Female. Carapace orange. Sternum brown. Coxae and legs orange. Dorsum of abdomen beige with brown folium (Fig. 501); venter with median dark band and lighter sides. Posterior median eyes 1.5 diameters of anterior median eyes, lateral eyes same diameter as anterior median eyes. Anterior median eyes 3 diameters apart, 4 from laterals. Posterior median eyes 1.5 diameters apart, a little over 3 from laterals. Abdomen as wide as long, with two humps (Fig. 501). Total length 3.9 mm. Carapace 1.9 mm long, 1.4 wide. First femur 1.7 mm, patella and tibia 2.3, metatarsus 1.3, tarsus 0.7. Second patella and tibia 1.9 mm, third 1.1, fourth 1.6.

Male. Darker than female, with ringed

legs. Eyes subequal. Anterior median eyes 1.5 diameters apart, 2 from laterals. Posterior median eyes a little more than their diameter apart, 2.2 from laterals. Endite with tooth. First coxa without hook. First and second tibiae of equal thickness, first with some macrosetae. Total length 3.6 mm. Carapace 1.8 mm long, 1.6 wide. First femur 2.1 mm, patella and tibia 2.4, metatarsus 1.5, tarsus 0.7. Second patella and tibia 2.1 mm, third 1.0, fourth 1.5.

*Diagnosis.* The female differs from *A. mendoza* (Figs. 477, 478) by having the openings of the epigynum in V-shaped depressions on the venter (Fig. 499), the male by having a shorter embolus (Fig. 481).

*Araneus baul* new species  
Figures 503–506; Map 5

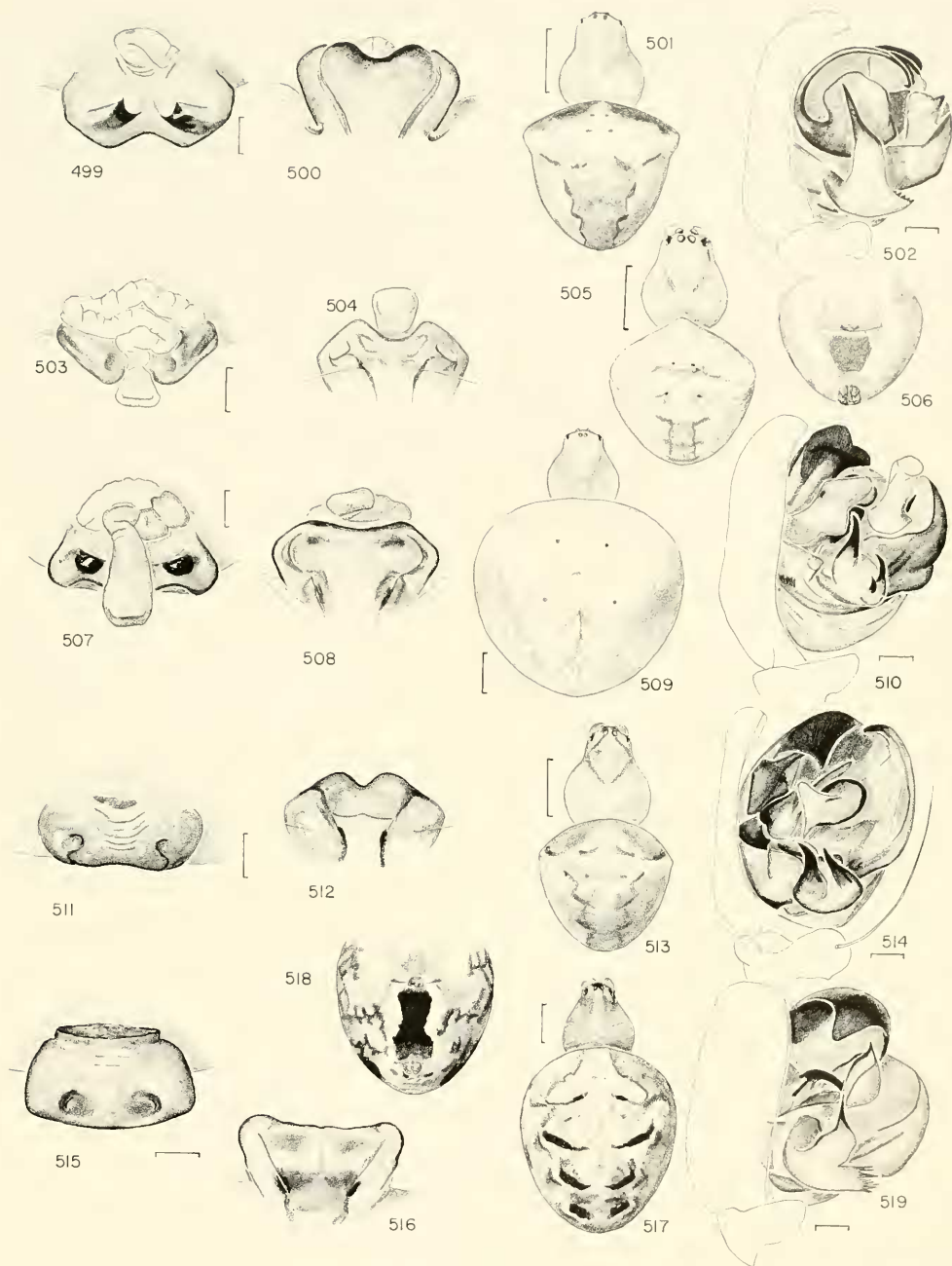
*Holotype.* Female from 21 km W of Rizo de Oro, along ridge SE of Cerro Baúl, border Oaxaca, Chiapas, Mexico, cloud forest, 1615 m, 6–8 Sept. 1972 (C. Mullinex, D. E. Breedlove), in CAS. The specific name is a noun in apposition after the type locality.

*Description.* Female. Carapace light orange, a diagonal dusky streak on each side. Chelicerae orange. Labium dark dusky. Endites dusky. Sternum black on each side, orange in middle. Coxae orange; legs light orange. Dorsum of abdomen dusky white with a transverse white band (Fig. 505); venter with a black mark between epigynum and spinnerets, otherwise white (Fig. 506). Posterior median eyes 1.3 diameters of anterior medians, laterals same diameter as anterior medians. Anterior median eyes slightly more than 1 diameter apart, the same from laterals. Posterior median eyes 0.7 their diameter apart, 1.5 from laterals. Abdomen as wide as long with lateral and anterior median humps (Fig. 505). Total length 3.6 mm. Carapace 1.6

Figures 499–502 *Araneus ocaxa* n. sp. 499–501. Female. 499. Epigynum ventral. 500. Epigynum, posterior. 501. Dorsal. 502. Male, left palpus

Figures 503–506 *A. baul* n. sp. female. 503. Epigynum, ventral. 504. Epigynum, posterior. 505. Dorsal. 506. Abdomen, ventral.

Figures 507–510 *A. arizonensis* (Banks). 507–509. Female. 507. Epigynum, ventral. 508. Epigynum, posterior. 509. Dorsal. 510. Male, palpus



Figures 511–514. *A. tenancingo* n. sp. 511–513. Female. 511. Epigynum, ventral. 512. Epigynum, posterior. 513. Dorsal. 514. Male palpus.

Figures 515–519. *A. tellezi* n. sp. 515–518. Female. 515. Epigynum, ventral. 516. Epigynum, posterior. 517. Dorsal. 518. Abdomen, ventral. 519. Male palpus.

Scale lines. 1.0 mm, genitalia 0.1 mm.

mm long, 1.4 wide. First femur 1.8 mm, patella and tibia 2.1, metatarsus 1.3, tarsus 0.6. Second patella and tibia 1.8 mm, third 1.0, fourth 1.5.

*Diagnosis.* The female differs from that of *A. nacional* (Figs. 474, 475) by having the sides of the base of the epigynum diagonal on each side, and from *A. mendoza* (Figs. 477, 478) by having a longer, narrower scape (Fig. 503).

*Araneus arizonensis* (Banks)  
Figures 507–510; Map 5

*Epeira arizonensis* Banks, 1900: 100. Female holotype from Arizona in MCZ, examined. Banks, 1901: 555, pl. 22, fig. 5, ♂.

*Neosconella arizonensis*:—Archer, 1951a: 38.

*Conaranea gertschi*:—Archer, 1951b: 7, figs. 17, 30, ♀. Misidentification.

*Araneus arizonensis*:—Levi, 1973: 497, figs 60–71, ♀, ♂.

*Description.* Female from Chihuahua, Mexico. Carapace light orange; sternum orange. Legs light orange. Dorsum of abdomen orange-white; venter with a white rectangle between epigynum and spinnerets. Eyes subequal. Anterior median eyes 1.2 their diameter apart, 1.5 from laterals. Posterior median eyes their diameter apart, a little less than 3 from laterals. Abdomen wider than long, with humps (Fig. 509). Total length 6.9 mm. Carapace 2.7 mm long, 2.1 wide. First femur 2.5 mm, patella and tibia 3.1, metatarsus 1.9, tarsus 0.7. Second patella and tibia 2.7 mm, third 1.7, fourth 2.3.

Male from Coahuila. Carapace dusky orange to orange-brown. Coxae orange; legs brown. Dorsum of abdomen with a speckled folium and a dark outline bordered by white; venter with a white square. Secondary eyes 0.8 diameter of anterior medians. Anterior median eyes their diameter apart, 1.5 from laterals. Posterior median eyes a little less than their diameter apart, 3 from laterals. Endite with tooth. First coxa without hook. Second tibia thinner than first, first with more macrosetae. Abdomen widest anteriorly. Total length 4.3 mm. Carapace 2.1 mm long, 1.8 wide. First femur 2.5 mm, patella and tibia

3.1, metatarsus 2.1, tarsus 0.7. Second patella and tibia 2.7 mm, third 1.6, fourth 2.2.

*Diagnosis.* The epigynum of the female differs from others by showing the seminal receptacles in a dark spot on each side of the scape (Fig. 507). The male palpus is distinguished by having three, almost parallel, large spines on the median apophysis (Fig. 510).

*Distribution.* Southern Colorado, New Mexico, Arizona to northern Mexico (Map 5).

*Additional Records.* MEXICO Coahuila: Guadalupe, 24 May 1952, ♂ (M. Cazier, W. J. Gertsch, AMNH). Chihuahua: 32 km W Matachic, 7 July 1947, ♀ (W. J. Gertsch, AMNH).

*Araneus tenancingo* new species  
Figures 511–514; Map 5

*Holotype.* Female holotype and male paratype from Tenancingo [Tenancingo], Est. México, Mexico, 2050 m, 27 Sept.–7 Oct. 1946 (H. Wagner), in AMNH. The specific name is a noun in apposition after the type locality.

*Description.* Female. Carapace orange, head dusky, with dusky line from posterior median eyes to sides of head, another from sides of head to middle of thorax. Sternum black; coxae light orange. Legs orange with dusky rings. Dorsum of abdomen brownish, lighter behind, with paired diagonal marks (Fig. 513). Venter black, bordered by white bracket on each side. Posterior median eyes 1.3 diameters of anterior medians, anterior lateral eyes 0.8 diameter, posterior laterals same diameter as anterior medians. Anterior medians 1.5 their diameter apart, 1.5 from laterals. Posterior medians 1.2 their diameter apart, a little less than 2 from laterals. Abdomen slightly longer than wide, with pair of humps. Total length 4.0 mm. Carapace 1.8 mm long, 1.4 wide. First femur 2.2 mm, patella and tibia 2.5, metatarsus 1.5, tarsus 0.8. Second patella and tibia 2.1 mm, third 1.0, fourth 1.7.

Male. Carapace orange, sides dark, dusky, with indistinct dark line from pos-

terior median eye to side. Sternum blackish, underlain by white spot anteriorly. Coxae light orange; legs orange, with indistinct dark rings. Dorsum of abdomen as in female; venter dusky with pair of white lines. Posterior median eyes 0.8 diameter of anterior medians, anterior lateral eyes 0.6 diameter, posterior laterals 0.7. Anterior medians their diameter apart, their diameter from laterals. Posterior medians 1.2 their diameter apart, 2.2 from laterals. Conductor without tooth at base. Palpus with two setae on tibia (one shown in Fig. 514); endite with tooth. First coxa without hook. First tibia thicker and with more macrosetae than second. Abdomen slightly longer than wide, with pointed humps. Total length 3.5 mm. Carapace 1.8 mm long, 1.6 wide. First femur 2.3 mm, patella and tibia 2.6, metatarsus 1.7, tarsus 0.8. Second patella and tibia 2.3 mm, third 1.2, fourth 1.6.

*Note.* It is uncertain whether this male belongs with the female. The coloration is as in female, but the anterior median eyes are larger than others.

*Diagnosis.* The female differs from others by having the genital openings in a depression on the ventral side, in the end of the seam between the median and lateral plates (Figs. 511, 512). In posterior view the median plate has a ventral notch (Fig. 512). The scape is torn off the epigynum (Fig. 511). The male has a distinctive median apophysis with two large spines, almost parallel, directed apically (Fig. 514).

### *Araneus tellezi* new species

Figures 515–519; Map 5

*Holotype.* Female holotype with two female and two male paratypes from El Xitle, Distrito Federal, Mexico, 12 Oct. 1942 (C. Tellez), in AMNH. The species is named after the collector.

*Description.* Female. Carapace orange-yellow, sides of head dusky, white pigment spot on thorax. Sternum dark brown; coxae orange-yellow. Legs orange-yellow with narrow, dark brown, distinct rings. Dorsum of abdomen with paired black bars

forming a folium outlined by white, and a white chevron anterior to folium (Fig. 517). Sides marbled with black. Venter has a median black rectangle with a white patch on each side (Fig. 518). Posterior median eyes 1.5 diameters of anterior medians, lateral eyes same diameter as anterior medians. Anterior medians 1.5 diameters apart, 1.5 from laterals. Posterior medians a little more than their diameter apart, 2.2 from laterals. Abdomen oval, with slight humps, narrower posteriorly (Fig. 517). Total length 6.4 mm. Carapace 2.0 mm long, 1.6 wide. First femur 2.3 mm, patella and tibia 2.7, metatarsus 1.6, tarsus 0.7. Second patella and tibia 2.3 mm, third 1.3, fourth 1.9.

Male. Color as in female. Posterior median eyes 1.3 diameters of anterior medians, lateral eyes same diameter as anterior medians. Anterior medians 1.3 diameters apart, 1.3 from laterals. Posterior medians their diameter apart, 2 from laterals. Endite with tooth. First coxa without hook. Second tibia thinner than first, first with macrosetae. Total length 3.4 mm. Carapace 1.8 mm long, 1.5 wide. First femur 2.1 mm, patella and tibia 2.5, metatarsus 1.5, tarsus 1.1. Second patella and tibia 2.0 mm, third 1.1, fourth 1.6.

*Diagnosis.* The female has the scape torn. Females of *A. tellezi* have, unlike those of related species, the oval abdomen longer than wide (Fig. 517), the openings in round depressions on the ventral surface of the base of the epigynum (Fig. 515), and the median posterior plate triangular (Fig. 516). The male is distinguished from males of *A. guerrerensis* (Fig. 493) by the shape of the coiled embolus and the domed terminal apophysis (Fig. 519).

### *Dubiepeira* new genus

*Type species.* *Metepeira dubitata* Soares and Camargo, 1948. The name *Dubiepeira* refers to doubtful generic placement of several species here assigned to it. The name is of feminine gender.

*Diagnosis.* The female epigynum is

small and has only the posterior margin and the posterior aspect sclerotized; the area from which the scape originates is soft (Figs. 520, 521). This is a presumed apomorphy.

The male's palpus is distinct; the median apophysis has a spur on its side extending laterally and distally, a presumed apomorphic character (Figs. 524–526, 535).

*Note.* Unfortunately, males are known for only two species, and the single male of *D. amacayacu* (Fig. 535) is shrivelled; it may once have been dry.

*Description.* The females (Fig. 522) are much like those of *Araneus*, but are glabrous, and the abdomen is oval to spherical and never has dorsal humps (Figs. 522, 529). Most importantly, the epigynum is relatively small.

The males are much smaller than the females. The palpal patella has two macrosetae, the endite lacks a tooth and the first coxa has no hook. The second tibia is not modified; it is as thick as the first. (In males of most *Araneus* species the size of *Dubiepeira* males, the endite has a tooth, the first coxa has a hook, and the second tibia is modified.)

*Relationship.* The genus is close to *Araneus*, and with *Araneus* it shares general appearance, spherical abdomen, wrinkled scape of the epigynum, and the three plates of the epigynum in posterior view. Also in both genera, the conductor of the male palpus sits on the rim of the tegulum (Figs. 525, 526) and there is a large terminal apophysis. *Dubiepeira* is distinct in the small size and light sclerotization of the epigynum and the unusual shape of the median apophysis and palpal tibia (Figs. 524–526).

*Natural History.* *Dubiepeira dubitata* females are found in humid locations, the female in a curled leaf retreat to the side of a large orb.

*Distribution.* All species here assigned to the genus are found in the Amazon drainage, and the range of *D. dubitata* extends to southern Brazil (Map 6).

KEY TO SPECIES OF *DUBIEPEIRA*

- 1. Males ..... 2
- Females ..... 3
- 2(1). Sickle-shaped terminal apophysis and bulky embolus behind the conductor (Fig. 535) ..... *amacayacu*
- Terminal apophysis bow-shaped and embolus a slender thread (Figs. 524, 526) ..... *dubitata*
- 3(2). In posterior view, median plate of epigynum with transverse bar (Fig. 521) ..... *dubitata*
- Median plate without transverse bar (Figs. 528, 532, 537, 541) ..... 4
- 4(3). Ventral edge of median plate with pair of concave indentations (Fig. 528) — *neptunina*
- Median plate otherwise ..... 5
- 5(4). Median plate with pair of lateral lobes (Fig. 541) ..... *amablemaria*
- Median plate otherwise (Figs. 532, 537) ..... 6
- 6(5). Median plate with ventral convex edge (Fig. 532) ..... *amacayacu*
- Median plate ventrally fused with lateral plates (Fig. 537) ..... *lamolina*

*Dubiepeira dubitata*

(Soares and Camargo) new combination

Plate 2; Figures 520–526; Map 6

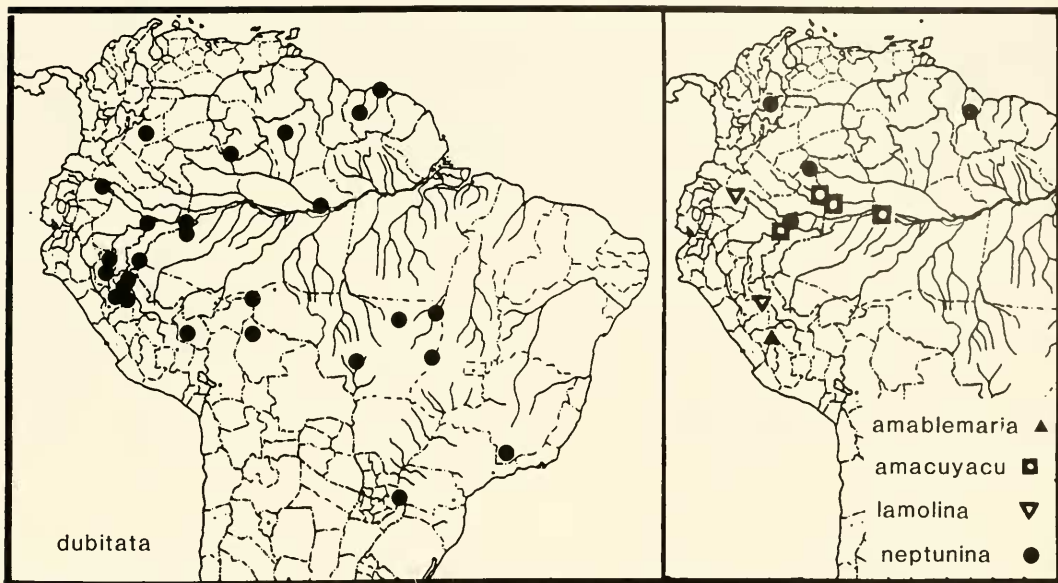
*Metepeira dubitata* Soares and Camargo, 1948: 375, figs. 30, 31, ♀, Female holotype and one paratype from Chavantina, Mato Grosso, Brazil, in MZSP nos. 1302, 1303, examined. Brignoli, 1983: 275.

?*Neosconella compsa* Soares and Camargo, 1948: 376, fig. 32, ♂, Male with both palpi lost, from Aragarças, Rio Araguaia confluence with Rio das Garças, Goiás, Brazil, in MZSP no. 1307, examined.

?*Araneus compsus*:—Brignoli, 1983: 262.

*Note.* The coloration suggests that the male *compsa* belongs with the female of *D. dubitata*. The palpus of the male illustrated by Soares and Camargo appears mounted and squashed on a slide. The second tibia of the *N. compsa* holotype is slightly thicker than the first.

*Description.* Female from Colombia. Carapace orange with black marks (Fig. 522). Sternum black. Coxae orange with black marks. Legs orange with contrasting black rings. Dorsum of abdomen white (Fig. 522), sides black, venter with a white spot on a light band on each side (Fig. 523). Secondary eyes 0.6 diameter of anterior

Map 6. Distribution of *Dubiepeira* species.

medians. Anterior median eyes 0.8 diameter apart, 2 from laterals. Posterior median eyes 0.6 diameter apart, 4 from laterals. Abdomen spherical (Fig. 522). Total length 12.7 mm. Carapace 5.9 mm long, 4.7 wide. First femur 6.0 mm, patella and tibia 7.5, metatarsus 5.8, tarsus 2.1. Second patella and tibia 6.7 mm, third 3.9, fourth 6.0.

Male from Colombia. Carapace yellow-white with median brown line, sides of thorax brown. Chelicerae, labium, endites, sternum black. Coxae yellow-white. Legs contrastingly ringed black and yellow-white. Dorsum of abdomen white, venter dusky to black. Thoracic depression round with plus-shaped mark. Posterior median eyes 0.7 diameter of anterior medians, laterals 0.6 diameter. Anterior median eyes 0.6 diameter apart, 0.6 from laterals. Posterior median eyes 0.6 diameter apart, 2 from laterals. Endite without tooth. First coxa without hook. Second tibia as thick as first. Abdomen oval, widest anteriorly. Total length 4.5 mm. Carapace 2.7 mm long, 2.0 wide. First femur 2.9 mm, patella

and tibia 3.7, metatarsus 2.9, tarsus 1.2. Second patella and tibia 3.1 mm, third 1.7, fourth 2.5.

*Variation.* A photograph of a female shows the carapace to be brown, the legs white with black rings, and the abdomen bright green (Plate 2). The holotype of *dubitata* has an orange sternum, and the legs are not ringed. Total length of females 11.4 to 14.4 mm, of males 3.6 to 6.5. Some females have the transverse bar of the posterior plate bent, chevron-like.

*Diagnosis.* The female differs from other *Dubiepeira* species by having a transverse sclerotized bar on the median plate of the epigynum in posterior view (Fig. 521). The male differs from that of *D. amacuyacu* (Fig. 535) by having a slender curved embolus (Figs. 524–526).

*Natural History.* Females have been collected from a bottom land swamp-forest, Madre de Dios Dpto., Peru; “fell into dugout canoe from overhanging vegetation in Venezuela”; on a moist slope facing Iguazu Falls in Paraná, Brazil. The female builds a curled-leaf retreat.

*Distribution.* Amazon drainage to Paraná State, Brazil (Map 6).

*Records.* VENEZUELA *Amazonas:* Upper Río Baria, 100 m (AMNH). SURINAM Voltzberg-Raleighvalle Reserve (MCZ); Republik (AMNH). COLOMBIA *Meta:* Puerto Lleras, Lomalinda (MCZ). ECUADOR *Napo:* Aguas Negras, Tarapuy (MECN); Reserva Faunistica Cuyabeno, Laguna Grande (MCZ); Río Tarapuy, at junction with Tarapoa road (MCZ); Pompeya, Napo River (MCZ). PERU *Loreto:* Río Momón near Iquitos (CAS); Río Bambo, Alto Tapiche (AMNH). *San Martín:* Bella Vista (AMNH); Hera, 20 km SE Moyobamba (AMNH). *Ucayali:* Pucallpa (CAS). *Huánuco:* Tingo María (AMNH); Monsón Valley, Tingo María (CAS); Parque Nac. A. von Humboldt (MHNSM); Jantas, La Molina (MHNSP). *Madre de Dios:* Parque Nac. Manu (MHNSM); N. R. Manu (USNM). BOLIVIA *Beni:* Chacobo Indian Village, Río Benicito (AMNH). BRAZIL *Roraima:* Ilha de Maracá, Amazonia (INPA); Ouro Prêto do Oeste, Faz. Nova Umás (MNRJ); Ilha de Maracá, Alto Alegre (INPA). *Amazonas:* Igarapé Belém nr. confluence with Río Solimoes (INPA); Manaus (MEG); Benjamin Constant (MNRJ). *Rondônia:* Abunã (MCZ). *Mato Grosso:* Barra do Tapirapé (AMNH); Xingu, Jacaré (AMNH); Barra dos Bugres (MNRJ); Chavantina (MZSP). *Minas Gerais:* Lavras (MCZ). *Paraná:* Iguaçu Falls (MCZ).

*Dubiepeira neptunina* (Mello-Leitão)  
new combination

Figures 527–530; Map 6

*Neosconella neptunina* Mello-Leitão, 1948: 170, figs. 12–14, ♀. Female holotype from Yawakuri River, Guiana, in BMNH, examined.  
*Araneus neptuninus*:—Brignoli, 1983: 263.

*Description.* Female holotype. Carapace orange. Chelicerae, labium, endites, sternum orange. Coxae, legs orange with a black ring around distal end of each tibia. Dorsum of abdomen white with some black marks (Fig. 529); sides with black patches; venter with black square between epigynum and spinnerets (Fig. 530). Secondary eyes 0.7 diameter of anterior medians. Anterior median eyes 0.5 diameter apart, 1.3 from laterals. Posterior median eyes 0.4 diameter apart, 2.5 from laterals. Abdomen spherical. Total length 9.4 mm. Carapace 4.0 mm long, 2.9 wide. First femur 3.4 mm, patella and tibia 4.5, metatarsus 3.1, tarsus 1.3. Second patella and tibia 3.8 mm, third 2.5, fourth 3.6.

*Diagnosis.* In posterior view of the epigynum the median plate has a pair of concave margins ventrally (Fig. 528), lacking the transverse bar of *D. dubitata* (Fig. 521).

*Records.* COLOMBIA *Santander:* Río Suárez, 800–1000 m, 11–17 Aug. 1946, ♀ (AMNH). *Vaupés:* Río Vaupés, Apr. 1906, ♀ (AMNH). PERU *Loreto:* 80 km NE Iquitos, 16–20 July 1989, 2♀ (G. B. Edwards, FSCA).

Figures 520–526. *Dubiepeira dubitata* (Soares and Camargo). 520–523. Female. 520. Epigynum, ventral. 521. Epigynum, posterior. 522. Dorsal. 523. Abdomen, ventral. 524–526. Male, left palpus. 524. Mesal. 525. Lateral. 526. Pulled apart.

Figures 527–530. *D. neptunina* (Mello-Leitão), female. 527. Epigynum, ventral. 528. Epigynum, posterior. 529. Dorsal. 530. Abdomen, ventral.

Figures 531–535. *D. amacayacu* n. sp. 531–534. Female. 531. Epigynum, ventral. 532. Epigynum posterior. 533. Dorsal. 534. Abdomen, ventral. 535. Male palpus (damaged).

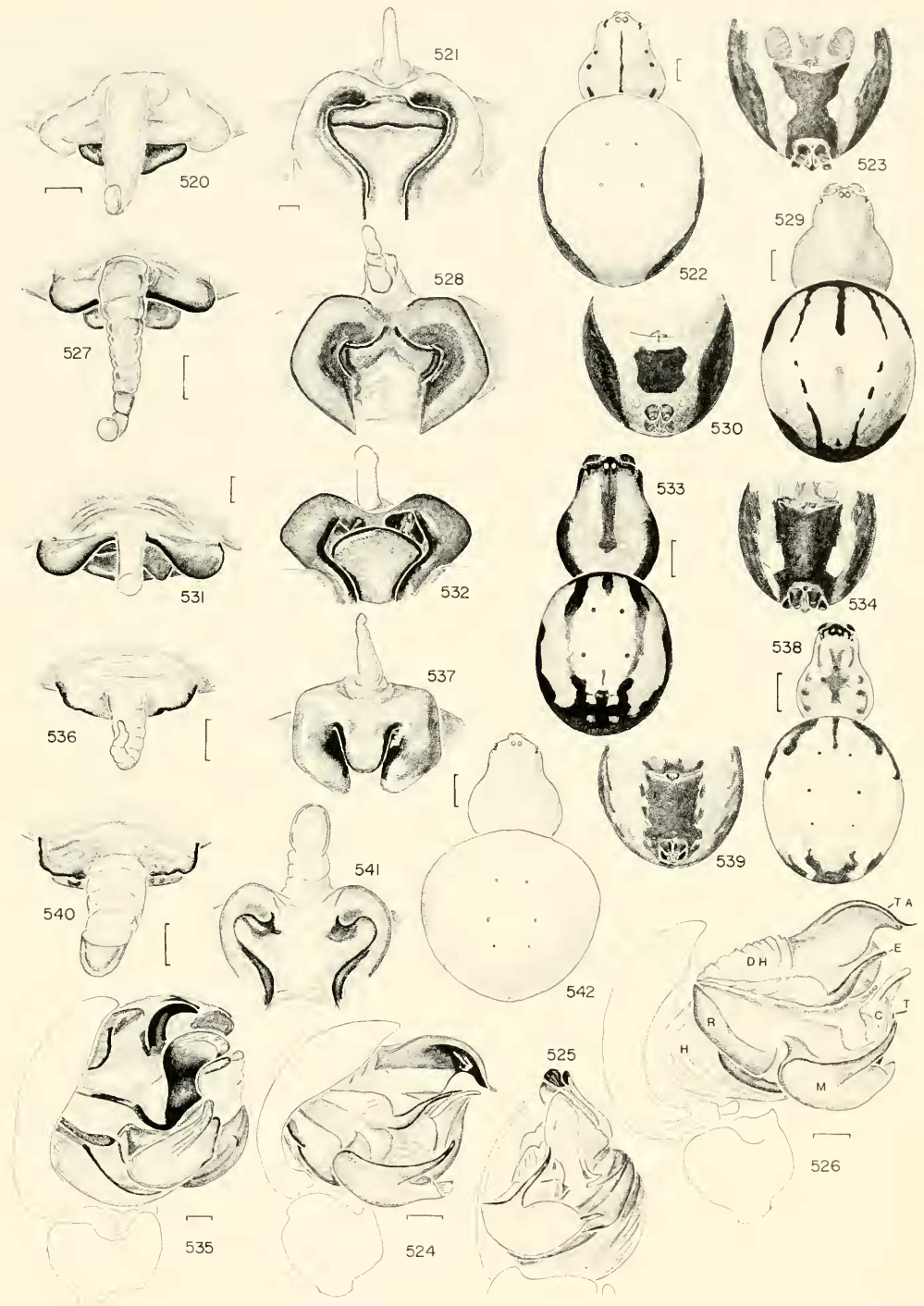
Figures 536–539. *D. lamolina* n. sp., female. 536. Epigynum, ventral. 537. Epigynum, posterior. 538. Dorsal. 539. Abdomen, ventral.

Figures 540–542. *D. amablemana* n. sp., female. 540. Epigynum, ventral. 541. Epigynum, posterior. 542. Dorsal.

*Abbreviations.* C, conductor; DH, distal hematodocha; E, embolus; H, hematodocha; M, median apophysis; R, radix; T, tegulum; TA, terminal apophysis.

*Scale bars.* 1.0 mm; genitalia 0.1 mm





*Dubiepeira amacayacu* new species  
 Figures 531–535; Map 6

*Holotype.* Female holotype from Amacayacú, Parque Nacional ca. 48 km NW of Leticia, 90–100 m, 70°16'W, 3°48'S, Dpto. Amazonas, Colombia, 3 Oct. 1985, on ground-growing fungus in primary forest (H. Sturm), in MCZ. The specific name is a noun in apposition after the type locality.

*Description.* Female holotype. Carapace light orange, sides of thorax with black band, eye region black and a median black band on head (Fig. 533). Chelicerae, labium, endites, and sternum black. Coxae light orange; legs light orange with wide black rings. Dorsum of abdomen white with contrasting symmetrical black marks (Fig. 533); venter black with light marks on each side (Fig. 534). Posterior median eyes 0.7 diameter of anterior medians, anterior laterals 0.7 diameter, posterior laterals 0.6. Anterior median eyes 0.7 diameter apart, 1 from laterals. Posterior median eyes 0.4 their diameter apart, 2 from laterals. Abdomen oval (Fig. 533). Total length 8.6 mm. Carapace 3.5 mm long, 2.8 wide. First femur 3.5 mm, patella and tibia 4.0, metatarsus 2.9, tarsus 1.2. Second patella and tibia 3.7 mm, third 2.1, fourth 3.4.

*Male.* Coloration slightly darker than in female; dorsum of abdomen with two black bands. Posterior median eyes 0.8 diameter of anterior medians, anterior laterals 0.8 diameter, posterior laterals 0.7. Anterior median eyes 1 diameter apart, 1 from laterals. Posterior median eyes 0.3 diameter apart, 2 from laterals. Second tibia as thick as first. Abdomen oval. Total length 5.2 mm. Carapace 2.9 mm long, 2.3 wide. First femur 3.3 mm, patella and tibia 3.9, metatarsus 3.1, tarsus 1.3. Second patella and tibia 3.2 mm, third 1.9, fourth 2.9.

*Note.* The male was matched with the female on the basis of the coloration and markings on the abdomen, especially the venter

*Diagnosis.* The ventral, convex margin of the median plate of the epigynum (Fig. 532) and the large bulky embolus of the male palpus (Fig. 535) separate this species from other *Dubiepeira*.

*Paratypes.* COLOMBIA Amazonas: Leticia, 21 June 1965, 7♀, 2 imm. (P. R. Craig, J. Robb, DU). PERU Loreto: 40 km NE Iquitos, 19, 21 July 1989, ♀ (H. V. Weems, FSCA). BRAZIL Amazonas: Fonte Boa, Oct. 1975, ♂ (M. Oliveira, AMNH).

*Dubiepeira lamolina* new species  
 Figures 536–539; Map 6

*Holotype.* Female holotype from La Molina, 270 m, Dantas, SW of Puerto Inca, Huánuco, Peru, 30 May 1987 (D. Silva D.), in MHNSM. The specific name is a noun in apposition after the type locality.

*Description.* Female holotype. Carapace yellowish white with paired black marks, eye region black (Fig. 538). Chelicerae orange with dusky marks. Labium and sternum black. Endites dusky to black. Coxae yellowish-white; legs yellowish-white with narrow broken black rings. Dorsum of abdomen with anterior black marks, and posterior white lines separated by black bars (Fig. 538); venter with a black band (Fig. 539); sides dusky to black. Posterior median eyes 0.7 diameter of anterior medians, laterals 0.4 diameter. Anterior median eyes 0.5 diameter apart, 0.6 from laterals. Posterior median eyes 0.4 diameter apart, 1.7 from laterals. Abdomen oval (Fig. 538). Total length 7.2 mm. Carapace 3.1 mm long, 2.3 wide. First femur 2.9 mm, patella and tibia 3.4, metatarsus 2.5, tarsus 1.1. Second patella and tibia 3.1 mm, third 1.9, fourth 2.7.

*Diagnosis.* This species differs from other *Dubiepeira* by having the median plate of the epigynum ventrally fused (Fig. 537). The generic assignment is uncertain.

*Paratypes.* ECUADOR Napo: Reserva Faunística Cuyabeno, Laguna Grande, 0°00'N, 76°10'–11'W, 31 July to 5 Aug. 1988, ♀ (W. Maddison 88-021, MCZ).

*Dubiepeira amablemaria* new species  
 Figures 540–542; Map 6

*Holotype.* Female holotype and immature paratype from Amable María, 600 m, Río Chinchamayo, Tarma Prov., Junín, Peru (K. Jelski, J. Sztolcman), in PAN. The specific name is a noun in apposition after the type locality.

*Description.* Female. Carapace yellow, only a little black pigment around eyes. Chelicerae, labium, endites, sternum, coxae, and legs yellow. Abdomen yellow-white (Fig. 542). Posterior median eyes 0.7 diameter of anterior medians, anterior laterals 0.7 diameter, posterior laterals 0.6. Anterior median eyes slightly more than their diameter apart, 2.2 from laterals. Posterior median eyes 1.3 diameters apart, 5 from laterals. Abdomen spherical (damaged) (Fig. 542). Total length 8 mm. Carapace 3.9 mm long, 3.0 wide. First femur 4.9 mm, patella and tibia 6.6, metatarsus 5.0, tarsus 1.3. Second patella and tibia 5.4 mm, third 2.7, fourth 4.4.

*Diagnosis.* This species differs from others by having the median plate of the epigynum with lateral lobes (Fig. 541). The generic assignment is uncertain.

#### *Aculepeira* Chamberlin and Ivie

*Aculepeira* Chamberlin and Ivie, 1942: 75. Type species by original designation *Epeira aculeata* Emerton [= *Aculepeira packardi* (Thorell)]. Levi, 1977: 222.

*Diagnosis.* The *Aculepeira* female has an epigynum with a pointed scape (Fig. 543), a presumed apomorphic character. The tip lacks the pocket present on the tip of the *Araneus* scape. The male has a large palpus with a median apophysis bearing two flagellae on its proximal end (Fig. 547), a presumed apomorphic character, the conductor is boat-shaped to disc-shaped (in ventral view, Levi, 1977, fig. 160). The structure of the genitalia is otherwise similar to that of *Araneus*. The conductor sits on the rim of the tegulum behind the median apophysis (Figs. 547, 552), there is no paramedian apophysis, and terminal and subterminal apophyses are present, plesiomorphic characters shared with *Araneus*.

The carapace of *Aculepeira* is low, with the posterior median eyes facing up (Figs. 545, 551). (Several species placed here have the posterior median eyes facing anterolaterally [Fig. 591] and may not belong here, but the males needed for correct

placement are unknown.) The abdomen in *Aculepeira* species is oval, longer than wide; some are dorsoventrally flattened (Figs. 545, 551, 556), not spherical as is typical in *Araneus*.

*Note.* The Neotropical species lack the ventral, median white band found in the Holarctic *Aculepeira* species and that previously was thought diagnostic (Levi, 1977); the abdomen of the Neotropical species also shows greater shape diversity than the abdomen of Holarctic species.

The males have a small embolus cap, usually two patellar macrosetae, endites with a tooth, and, in some species, a coxal hook.

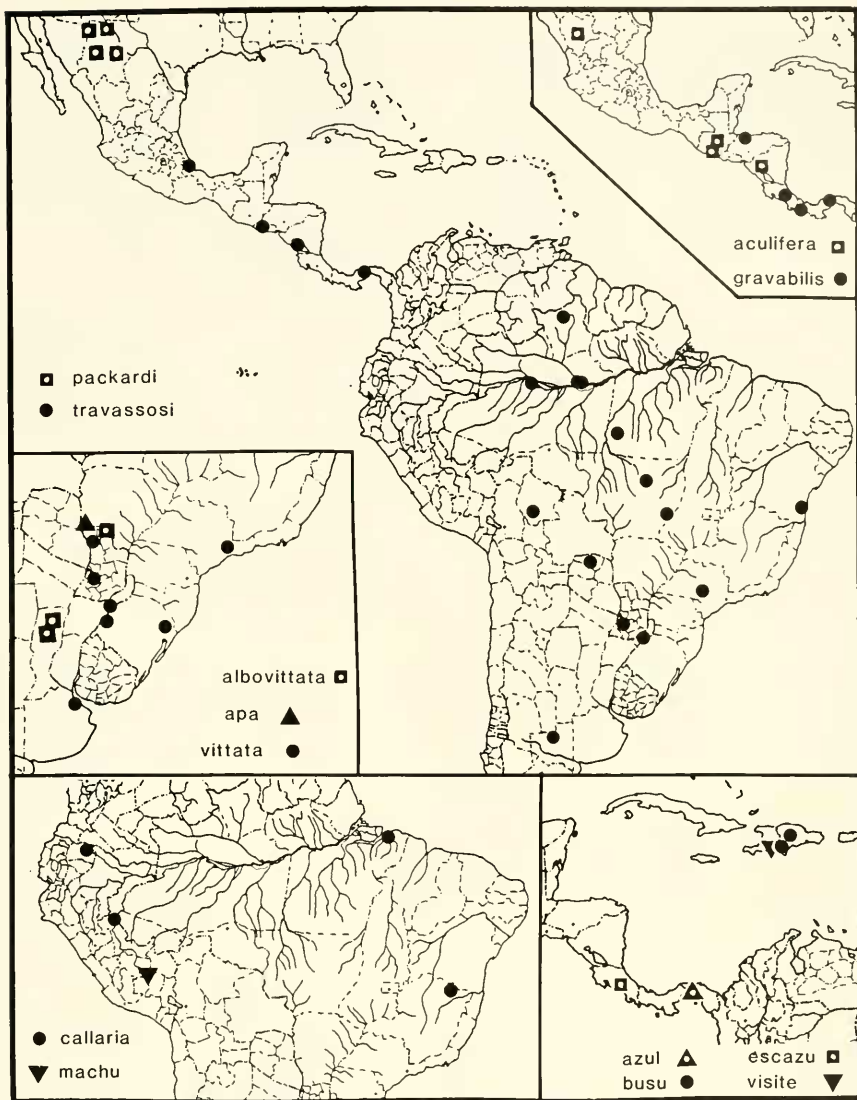
The following species placed in this genus have the eyes directed anterolaterally (as in the unrelated *Eustala* and *Wixia*) and may not belong here, but the males are unknown: *aculifera*, *azul*, *busu*, *escazu*, *gravabilis*, and *visite*. The abdomen of some of these Central American and Caribbean species is more conventionally subspherical. These species all differ from *Araneus* by having a worm-shaped, wrinkled, pointed scape (Figs. 566, 578).

*Natural History.* The Palearctic species make a complete orb. *Aculepeira packardi* has a retreat, but some species lack it.

#### KEY TO FEMALE ACULEPEIRA FROM THE NEOTROPICS

1. Abdomen with a ventral, median, white streak, Chihuahua, Mexico (Map 7) ..... *packardi*
  - If ventral white markings present on abdomen, markings paired ..... 2
- 2(1). Abdomen with a median, dorsal white band (Figs. 551, 562) ..... 3
  - Abdomen marked otherwise ..... 4
- 3(2). Abdomen length more than twice its width (Fig. 562); epigynum as in Figures 560, 561; Paraguay(?), northern Argentina ..... *albovitata*
  - Abdomen length less than 1.5 times its width (Fig. 551); epigynum as in Figures 548-550; São Paulo State, Brazil, to Paraguay and to Buenos Aires Prov., Argentina (Map 7) ..... *vittata*
- 4(2). Abdomen with longitudinal bands (Fig. 559); epigynum as in Figure 557; Paraguay (Map 7) ..... *apa*

- Abdomen with folium or marked otherwise ..... 5
  - 5(4) Abdomen widest in posterior half (Figs. 545, 556); posterior median eyes facing dorsally ..... 6
  - Abdomen widest in middle or anterior half (Figs. 568, 572, 580, 598); posterior median eyes facing anterolaterally (Figs. 580, 591) ..... 7
  - 6(5) Width of scape less than half width of epigynum base (Fig. 543); widespread (Map 7) ..... *travassosi*
  - Width of scape more than two-thirds of epigynum base (Figs. 553, 555); Dpto. Cusco, Peru (Map 7) ..... *machu*
  - 7(5) Hispaniola (Map 7) ..... 8
  - Central America (Map 7) ..... 9
  - 8(7) Abdomen hardly longer than wide (Fig. 594); venter of abdomen with two spots (Fig. 595); epigynum as in Figures 592, 593 ..... *visite*
  - Abdomen almost twice as long as wide (Fig. 598); venter of abdomen with a pair of longitudinal white streaks (Fig. 599); epigynum as in Figures 596, 597 ..... *busu*
  - 9(7) In ventral view of epigynum, lateral plates of base longer than wide (Figs. 566, 578) ..... 10
  - In ventral view of epigynum, lateral plates about as wide as long (Figs. 585, 589) ..... 11
  - 10(9) Abdomen wider than long (Fig. 580) with one pair of ventral white spots (Fig. 554); Central America ..... *gravabilis*
  - Abdomen longer than wide (Figs. 568, 572) with two pairs of ventral spots (Fig. 569); Mexico to Guatemala (Map 7) ..... *aculifera*
  - 11(9) Median plate of epigynum in posterior view twice as wide as laterals (Fig. 586); Costa Rica (Map 7) ..... *escazu*
  - Median plate of epigynum in ventral view about as wide as lateral plates (Fig. 590); Panama (Map 7) ..... *azul*
- KEY TO MALE ACULEPEIRA**
- 1 Distal end of terminal apophysis with a tooth (Fig. 565); Amazon ..... *callaria*
  - Distal end of terminal apophysis otherwise (Figs. 547, 552, 563) ..... 2
  - 2(1) Lateral end of median apophysis with a tooth (Fig. 563); Paraguay, Argentina (Map 7) ..... ?*albovittata*
  - Lateral end of median apophysis with a "fish tail" (Figs. 547, 552) ..... 3
  - 3(2) Venter of abdomen with a longitudinal median white streak. Chihuahua, Mexico (Map 7) ..... *packardi*
  - Venter of abdomen without a longitudinal median white streak ..... 4
  - 4(3) Abdomen with a longitudinal dorsal white band (Fig. 551); São Paulo State, Brazil, to Buenos Aires Prov., Argentina (Map 7) ..... *lisei*
  - Abdomen with a dorsal folium (Fig. 545); Mexico to Argentina (Map 7) ..... *travassosi*
- Aculepeira packardi* (Thorell)**  
Map 7
- Epeira packardii* Thorell, 1875: 490. Left palpus from holotype in NHRM, examined.
- Aculepeira packardi*:—Levi, 1977: 228, figs. 148–161, ♀, ♂.
- Diagnosis.** Unlike the Neotropical species, this species has a white median ventral streak on the abdomen (Levi, 1977, fig. 155).
- Distribution.** Siberia, Labrador, western United States to Chihuahua, Mexico (Map 7).
- Aculepeira travassosi***  
(Soares and Camargo)  
new combination  
Figures 543–547; Map 7
- Neosconella travassosi* Soares and Camargo, 1948: 377, figs. 33, 34, ♀. Female holotype with three paratypes from Chavantina, Mato Grosso, Brazil, in MZSP no. 1300, examined.
- Neosconella cutucensis* Kraus, 1955: 23, figs. 67, 69, ♂. Male holotype from sea level, Cutuco, El Salvador, in SMF no. 8503, examined. NEW SYNONYMY.
- Araneus cutucensis*:—Brignoli, 1983: 262.
- Araneus travassosi*:—Brignoli, 1983: 263.
- Description.** Female from Nicaragua. Carapace yellow, sides brown, sides of thorax yellow. Chelicerae marbled brown and yellow; sternum yellow, sides brown with some white pigment. Coxae yellow; legs ringed brown and yellow. Dorsum of abdomen reddish-brown with outline of dusky folium (Fig. 545). Venter black with a white U-shaped mark (Fig. 546). Posterior median and lateral eyes 0.8 diameter of anterior medians. Anterior medians their diameter apart, 1.2 diameters from laterals. Posterior medians 0.5 diameter apart, 2.2. from laterals. Abdomen oval, longer than wide, widest behind; with sclerotized discs on dorsum (Fig. 545). Total length 7.0 mm. Carapace 3.0 mm long, 2.5 wide.

Map 7. Distribution of *Aculepeira* species.

First femur 2.5 mm, patella and tibia 3.4, metatarsus 2.1, tarsus 1.1. Second patella and tibia 2.9 mm, third 2.0, fourth 2.9.

Male from Panama. Coloration as in female. Posterior median and lateral eyes 0.7 diameter of anterior medians. Anterior medians 0.7 diameter apart, 0.7 from laterals. Posterior medians 0.5 diameter apart, 1.8 from laterals. Endite with short tooth, palpal patella with two long macrosetae.

First coxa with hook. Second tibia thicker than first with large distal macroseta. Abdomen elongate oval, more pointed in front than behind, with sclerotized discs. Total length 5.2 mm. Carapace 2.7 mm long, 2.1 wide. First femur 2.5 mm, patella and tibia 3.4, metatarsus 2.3, tarsus 1.1. Second patella and tibia 3.1 mm, third 1.8, fourth 2.6.

*Variation.* The U-shaped white marks

on the venter of the abdomen are frequently absent or may be reduced to two vertical bars. Total length of females 5.0 to 8.5 mm, of males 3.5 to 5.2. The female and male genitalia are unusually variable. While the shape of the scape is about the same in ventral view of the base, no two individuals have the outline of the plates alike.

**Diagnosis.** The species is separated from *A. vittata* by the distinct dorsal markings on the abdomen, with a folium containing several sclerotized paired muscle scars (Fig. 545), and from *A. machu* by the narrow scape of the epigynum (Fig. 543). There is a superficial resemblance to *Epeira carolinensis* Archer, which I placed in *Metazygia* (Levi, 1977: 94, figs. 112–117).

**Natural History.** Females have been collected from the canopy of a tree in an inundated forest and on low vegetation in a non-flooded forest, all near Manaus, Brazil, and on a radio antenna on the summit of Cerro Acahay in a disturbed forest in Paraguay.

**Distribution.** From Mexico to Argentina (Map 7).

**Records.** MEXICO *Veracruz*: 10 km SW Puente Nacional, 180 m, ♂, 2 imm. (G. Ball, D. R. Whitehead, R. Leech, MCZ). NICARAGUA *Granada*, ♀ (C. F. Baker, MCZ). PANAMA *Panamá*: Barro Colorado Isl., ♂ (A. M. Chickering, MCZ). BRAZIL *Roraima*: Ilha de Maracá, Alto Alegre, ♀ (A. Lise, INPA). *Pará*: Jacaré-Acanga, ♂ (M.

Alvarenga, AMNH). *Amazonas*: Manaus, Igapó, Tarumã-Mirim, 3♀ (H. Höfer, INPA); Ilha de Marchantaria, ♀ (H. Höfer, INPA); Tefé, ♂ (H. O. Parrish, MCZ). *Bahia*: Uruçuca, ♀ (J. S. Santus, MCN 10293). *Mato Grosso*: Xingu, Jacaré, ♀ (Alvarenga, Werner, AMNH). *São Paulo*: São Paulo, Botucatu, ♀ (I. M. P. Rinaldi, L. C. Forti, MZSP). BOLIVIA *Beni*: Est. Biol. Beni, 50 km E San Borja, ♀, 2♂ (S. Larcher, USNM). PARAGUAY *Chaco*: Parque Nac. Defensores, ♀ (J. Kochalka, IBNP). *Paraguarí*: Cerro Acahay, ♀ (J. Kochalka, IBNP). ARGENTINA *Misiones*: Río Uruguai, 2♀ (E. A. Giai, MACN). ?*La Pampa*: "Manantiales," ♀ (MACN).

*Aculepeira vittata*  
(Gerschman and Schiapelli)  
new combination  
Figures 548–552; Map 7

*Metepeira vittata* Gerschman and Schiapelli, 1948: 17, figs. 26, 27, ♀. Female holotype from Santa María, Misiones Prov., Argentina, in MACN, examined. Brignoli, 1983: 276.

**Description.** Female from Vacaria. Carapace with head orange-black, thorax orange. Chelicerae, labium, endites black. Sternum orange-black. Coxae orange, first two darker; legs orange with dusky rings, first two femora black. Dorsum of abdomen with longitudinal white band (Fig. 551); venter black without markings. Posterior median eyes 0.7 diameter of anterior

Figures 543–547. *Aculepeira travassosi* (Soares and Camargo). 543–546. Female. 543. Epigynum, ventral. 544. Epigynum, posterior. 545. Dorsal. 546. Abdomen, ventral. 547. Male, left palpus.

Figures 548–552. *A. vittata* (Gerschman and Schiapelli). 548–551. Female. 548. Epigynum, ventral. 549. Epigynum, posterior. 550. Epigynum, ventral, scape torn off. 551. Dorsal. 552. Male palpus.

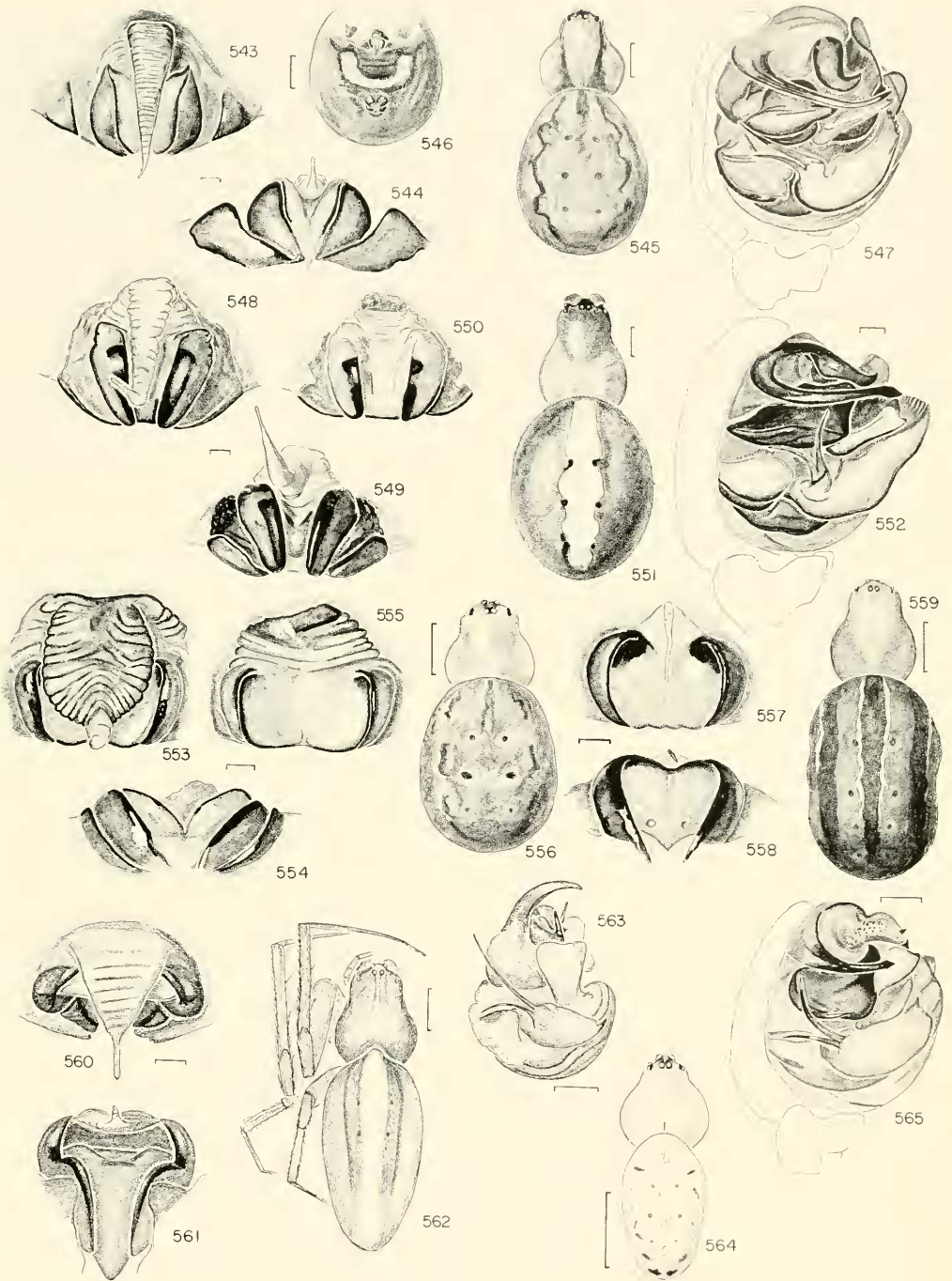
Figures 553–556. *A. machu* n. sp., female. 553. Epigynum, ventral. 554. Epigynum, posterior. 555. Epigynum, ventral, scape torn off. 556. Dorsal.

Figures 557–559. *A. apa* n. sp., female. 557. Epigynum, ventral. 558. Epigynum, posterior. 559. Dorsal.

Figures 560–563. *A. albovittata* (Mello-Leitão), female. 560. Epigynum, dorsal. 561. Epigynum, posterior. 562. Dorsal. 563. Male palpus expanded.

Figures 564, 565. *A. calliana* n. sp., male. 564. Dorsal. 565. Palpus.

Scale bars. 1.0 mm, genitalia 0.1 mm



medians, anterior laterals 0.7 diameter, posterior laterals 0.5. Anterior median eyes slightly more than their diameter apart, 1.3 from laterals. Posterior median eyes slightly less than their diameter apart, 3 from laterals. Abdomen oval, longer than wide (Fig. 551). Total length 10.5 mm. Carapace 4.1 mm long, 3.0 wide. First femur 2.9 mm, patella and tibia 4.0, metatarsus 2.6, tarsus 1.1. Second patella and tibia 3.7 mm, third 2.5, fourth 3.8.

Male from São Paulo. Color as in female. Posterior median eyes 0.8 diameter of anterior medians, anterior laterals 0.8 diameter, posterior laterals 0.7. Anterior median eyes slightly more than 1 diameter apart, 1.2 from laterals. Posterior median eyes 0.8 diameter apart, 2.4 from laterals. Endite with minute lateral tooth, palpal trochanter with tooth. Palpal patella with two macrosetae. First coxa with small hook. Second tibia thicker than first with short and long macrosetae. Abdomen oval. Total length 6.1 mm. Carapace 3.1 mm long, 2.4 wide. First femur 2.7 mm, patella and tibia 3.7, metatarsus 2.5, tarsus 1.1. Second patella and tibia 3.5 mm, third 2.1, fourth 3.4.

*Note.* In living individuals the light stripe on the abdomen is yellow.

*Variation.* Total length of females 8.1 to 11.2 mm, of males 5.8 to 7.4.

*Diagnosis.* The white or yellow dorsal stripe on the black abdomen (Fig. 551) is more diagnostic than the genitalia (Figs. 548, 550, 552).

*Natural History.* Females in Paraguay were found in spiny umbellifers. When disturbed, they drop into the water between leaves and crawl so deep that one has to tear the plant apart. This behavior is like that of *Alpaida quadrilobata* (J. Kochalka, in letter).

*Distribution.* São Paulo, Brazil, to Paraguay and Buenos Aires, Argentina (Map 7)

*Paratypes.* BRAZIL, São Paulo: São Paulo, Ipiranga, 26 Aug. 1941, ♀, 2♂ (B. A. M. Soares, MZSP 9654). Mato Grosso: ?Oct. 1976, ♀ (M. Alvarenga, AMNH). Rio Gran-

de do Sul: Garruchos, S. Borja, 11 Dec. 1975, 4♀, ♂, 2 imm. (A. Lise, MCN 3155); Vacaria, 15 Jan. 1974, 7♀, 6 imm. (A. Lise, MCN 306); 21–25 Apr. 1982, ♀ (A. Lise, MCN 10238). PARAGUAY *Concepción*: Horqueta, 9 Apr. 1988, 2♀ (J. A. Kochalka, IBNP). *Paraguarí*: betw. Acahay and Cerro Acahay, 150 m, 21 Apr. 1984, ♂ (J. A. Kochalka, IBNP). ARGENTINA *Buenos Aires*: Buenos Aires, ♀ (MACN).

*Aculepeira machu* new species  
Figures 553–556; Map 7

*Holotype.* Female holotype (with scape) and female paratype (with scape torn off) from Machupicchu, Cusco, Peru, ruins and bamboo-cloud forest, 2400 m, 16 Oct. 1987 (J. Coddington), in USNM. The specific name is a noun in apposition derived from the name of the type locality.

*Description.* Female holotype. Carapace streaky orange, darker on sides of head, glossy. Chelicerae, labium, endites, sternum orange. Coxae lighter orange; legs light orange, ringed dark orange. Dorsum of abdomen with indistinct folium (Fig. 556); venter black. Eyes subequal. Anterior median eyes slightly less than 1 diameter apart, 1.5 from laterals. Posterior median eyes 0.5 diameter apart, 2 from laterals. Abdomen oval, widest posteriorly and slightly flattened (Fig. 556). Total length 5.2 mm. Carapace 2.1 mm long, 1.8 wide. First femur 1.8 mm, patella and tibia 2.5, metatarsus 1.5, tarsus 0.7. Second patella and tibia 2.2 mm, third 1.3, fourth 1.9.

*Diagnosis.* Unlike that of *A. travassosi* (Figs. 543, 544) and *A. vittata* (Figs. 548, 549), the scape of the epigynum is wider than half the width of the epigynum base (Figs. 553, 555).

*Aculepeira apa* new species  
Figures 557–559; Map 7

*Holotype.* Female holotype from Apa, Paraguay, Oct. 1908, in AMNH. The specific name is a noun in apposition after the type locality.

*Description.* Female. Carapace dark glossy orange. Chelicerae, labium, endites,



sternum orange. Coxae orange; legs brown with indistinct darker longitudinal lines. Dorsum of abdomen with orange, white and dark brown longitudinal bands (Fig. 559); venter black. Posterior median eyes 0.7 diameter of anterior medians, anterior laterals 0.8 diameter, posterior laterals 0.7. Anterior median eyes 1 diameter apart, 1.2 from laterals. Posterior median eyes 0.5 diameter apart, 2.5 from laterals. Abdomen oval (Fig. 559). Total length 6.2 mm. Carapace 2.5 mm long, 2.1 wide. First femur 2.0 mm, patella and tibia 2.8, metatarsus 1.8, tarsus 0.8. Second patella and tibia 2.5 mm, third 1.5, fourth 2.5.

*Diagnosis.* The small thread-like scape of the epigynum (Fig. 557) and the dorsal stripes of the abdomen (Fig. 559) distinguish this species from others.

*Aculepeira albovittata* (Mello-Leitão)  
new combination

Figures 560–563; Map 7

*Neosconella albovittata* Mello-Leitão, 1941b: 214, fig. 20, ♀. Female holotype from Caraguatay, Santa Fé Prov., Argentina, in MLP, examined.

*Araneus melloi* Brignoli, 1983: 263. New name for *Araneus albovittata*, preoccupied by Westring, 1851.

*Description.* Female. Carapace, sternum, legs orange. Dorsum of abdomen with a median white band indistinctly bordered by a dark band on each side; and a narrow line of red pigment between dark and white (Fig. 562). Venter with a dusky longitudinal patch, longer than wide. Posterior median eyes same diameter as anterior medians, anterior laterals 0.7 diameter, posterior laterals 0.8. Anterior median eyes 1.3 diameters apart. Posterior median eyes their diameter apart. Abdomen elongate oval (Fig. 562). Total length 7.0 mm. Carapace 2.8 mm long, 1.8 wide. First femur 2.8 mm, patella and tibia 3.7, metatarsus 2.7, tarsus 1.3. Second patella and tibia 3.6 mm, third 2.2, fourth 2.3.

Male from Paraguay. Color as in female, abdomen with white pigment patches in median band. Posterior median eyes 0.7 diameter of anterior medians, laterals 0.6

diameter. Anterior median eyes 1 diameter apart, 0.6 from laterals. Posterior median eyes 1 diameter apart, 1.8 from laterals. Endite without tooth. Palpal patella with two macrosetae. First coxa without hook. First femur with six long macrosetae on prolateral side. Second tibia slightly thicker than first. Abdomen elongate oval. Total length 3.6 mm. Carapace 1.6 mm long, 1.2 wide. First femur 1.9 mm, patella and tibia 2.3, metatarsus 1.7, tarsus 0.7. Second patella and tibia 2.0 mm, third 1.1, fourth 1.8.

*Note.* The male from Paraguay is matched on the basis of similar structure and markings. Unfortunately its palpi are expanded (Fig. 563). The match is uncertain.

*Diagnosis.* The female is distinguished from other Neotropical *Aculepeira* by the elongate abdomen (Fig. 562) and by the triangular scape overhanging a transverse cavity (Fig. 560). The male has a sickle-shaped terminal apophysis (Fig. 563).

*Records.* PARAGUAY *Amambay:* Parque Nacional Cerro Corá, 30 Oct.–4 Nov. 1983, ♂ (J. Kochalka, MCZ). ARGENTINA *Santa Fé:* Calchaquí, Dec. 1949, ♀ (M. Birabén, MLP).

*Aculepeira callaria* new species  
Figures 564, 565; Map 7

*Holotype.* Male from Colonia Callaría, Río Callaría, 15 km from Ucayali, Dpto. Ucayali, Peru, 1–16 Oct. 1961 (B. Malkin), in AMNH. The specific name is a noun in apposition after the type locality.

*Description.* Male holotype. Carapace light orange. Chelicerae, labium, endites orange. Sternum orange, dusky posteriorly. Coxae orange; legs dusky orange. Dorsum of abdomen light orange with an indistinct median, longitudinal band of white pigment spots and some paired dusky marks posteriorly, and a pair of black spots on posterior (Fig. 564); venter light orange. Posterior median and anterior lateral eyes 0.6 diameter of anterior medians, posterior laterals 0.5. Anterior median eyes 0.6 their diameter apart, 0.5 from laterals. Posterior

median eyes 0.3 diameter apart, 2 from laterals. Palpal patella with one seta, endite with tooth. First coxa with small hook on posterior face. Second tibia thicker than first, with macrosetae. Abdomen elongate oval. Total length 3.1 mm. Carapace 1.5 mm long, 1.3 wide. First femur 1.5 mm, patella and tibia 1.8, metatarsus 1.4, tarsus 0.7. Second patella and tibia 1.6 mm, third 1.0, fourth 1.5.

*Variation.* Total length 3.0 to 3.4 mm.

*Diagnosis.* The male differs from other *Aculepeira* males by having a spine at the tip of the terminal apophysis (Fig. 565) and from *A. albovittata* (Fig. 563) by the shape of the embolus and terminal apophysis (Fig. 565).

*Paratypes.* ECUADOR *Napo*: Reserva Faun. Cuyabeno, Laguna Grande, 76°10'W, 0°00'S, 1-7 Aug. 1988, ♂ (W. Maddison, MCZ). BRAZIL *Pará*: Belém, Fazenda Velha, June 1970, ♂ (M. E. Galiano, MEG). Minas Gerais: Pedra Azul, Dec. 1970, ♂ (P. M. Oliveira, AMNH).

*Aculepeira aculifera* (O. P.-Cambridge)  
new combination

Figures 566-577; Map 7

*Epeira sargi* O. P.-Cambridge, 1889: 28, pl. 6, fig. 2, ♀. Female holotype from Chilascó, Guatemala, in BMNH, examined. NEW SYNONYMY.

*Epeira aculifera* O. P.-Cambridge, 1889: 29, pl. 7, fig. 3, ♀. Female holotype from southern slope of Volcán de Fuego, Guatemala, in BMNH, examined. Keyserling, 1892: 207, pl. 10, fig. 153, ♀.

*Aranea aculifera*.—F. P.-Cambridge, 1904: 512, pl. 49, fig. 5, ♀. Roewer, 1942: 836.

*Aranea sargi*.—F. P.-Cambridge, 1904: 511, pl. 49, fig. 2, ♀. Roewer, 1942: 851.

*Araneus aculifer*.—Bonnet, 1955: 420.

*Araneus sargi*.—Bonnet, 1955: 591.

*Note.* The holotype of *Epeira aculifera* is in poor condition, having once been pinned. The pigment and markings have been damaged as a result of poor preservation. *A. sargi* (Figs. 570-572) is probably this species but I am not certain. With a total length of 8.5 mm, *A. sargi* is slightly

larger than the holotype, and it has more contrasting markings.

*Description.* Female holotype of *aculifera*. Carapace orange-brown, mottled. Chelicerae, labium, endites brown. Sternum dark brown with median orange streak. Coxae mottled orange to brown. Legs orange-brown, with indistinct darker rings. Dorsum of abdomen with indistinct folium (Figs. 568, 576), venter with median black band enclosing two pairs of white patches (Figs. 569, 577). Secondary eyes 0.9 diameter of anterior medians. Anterior median eyes their diameter apart, 1.5 from laterals. Posterior median eyes 1.2 diameters apart, 3 from laterals. Abdomen elongate oval. Total length 7.0 mm. Carapace 2.9 mm long, 2.3 wide. First femur 2.7 mm, patella and tibia 3.5, metatarsus 2.3, tarsus 0.9. Second patella and tibia 3.0 mm, third 1.8, fourth 2.9.

*Variation.* Other than the type, only three specimens were available that might belong to this species. The sclerotized plates of the epigynum are different in each of the four specimens (Figs. 567, 571, 575). The female of *A. sargi* has markings that are probably unique to that individual (Fig. 572).

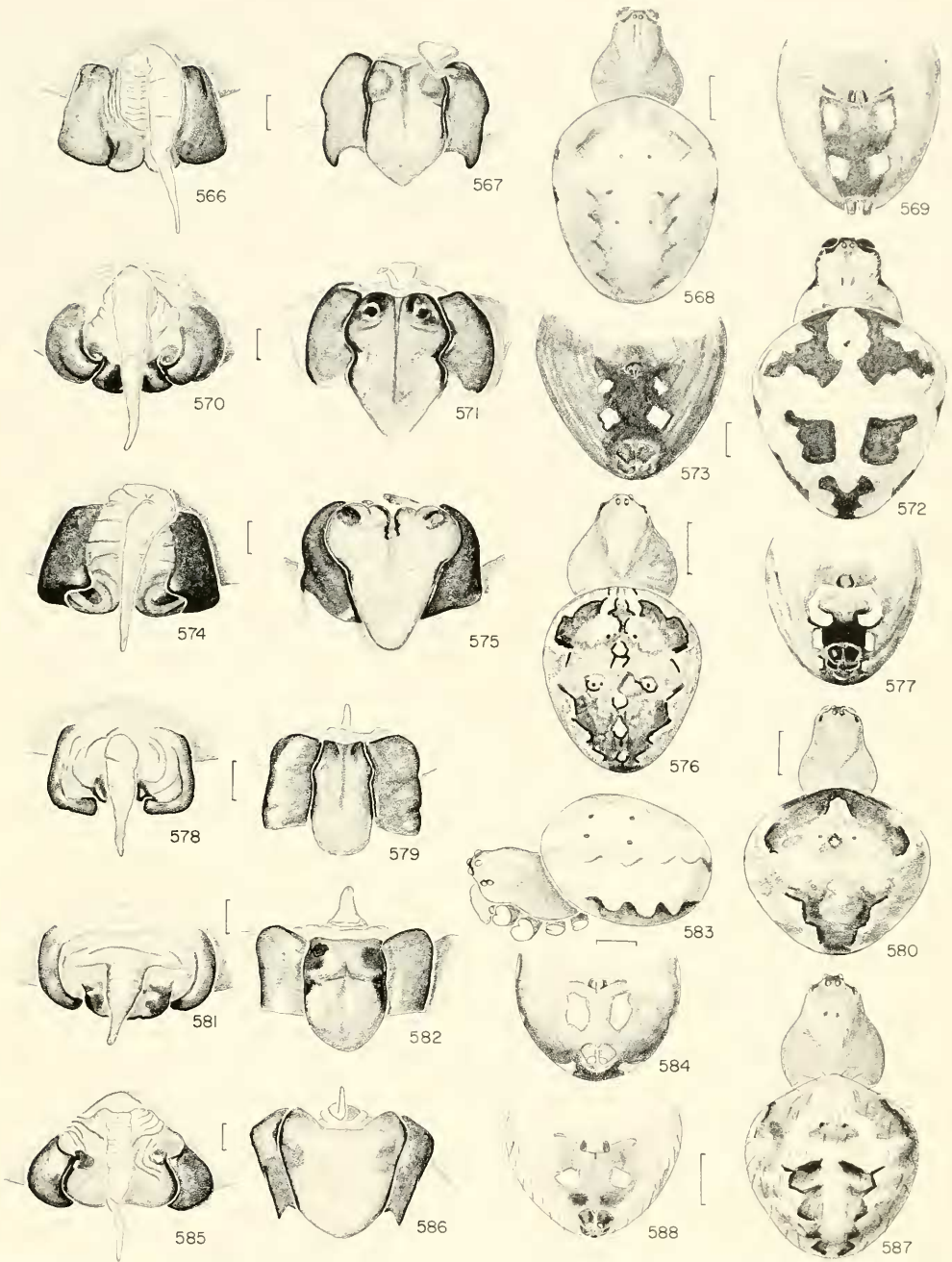
*Diagnosis.* This species, unlike *A. gravabilis* (Figs. 578, 581), has the scape of the epigynum folded on itself (Figs. 566, 570, 574) and the abdomen longer than wide, with four ventral white patches (Fig. 569). The placement in *Aculepeira* is tentative.

*Record.* MEXICO *Durango*: 16.5 km E La Ciudad, ♀ (R. E. Leech, MCZ). NICARAGUA *Jinotega*, 15 Aug. 1989, ♀ (F. Reinboldt, JMM).

*Aculepeira gravabilis* (O. P.-Cambridge)  
new combination

Figures 578-584; Map 7

*Epeira gravabilis* O. P.-Cambridge, 1889: 33, pl. 5, fig. 7, ♀. Female holotype from Volcán de Chiriquí,



Figures 578–584. *A. gravabilis* (O. P.-Cambridge), females. 578, 581. Epigynum, ventral. 579, 582. Epigynum, posterior. 580. Dorsal. 583. Lateral. 584. Abdomen, ventral. 578, 579 (Costa Rica). 580 (Panama). 581–584 (Honduras).

Figures 585–588. *A. escazu* n. sp., female. 585. Epigynum, ventral. 586. Epigynum, posterior. 587. Dorsal. 588. Abdomen, ventral.

Scale lines. 1.0 mm, genitalia 0.1 mm.

Panama, in BMNH, examined. Keyserling, 1892: 122, pl. b, fig. 90, ♀.

*Aranea gravabilis*.—Roewer, 1942: 643.

*Araneus gravabilis*.—Bonnet, 1955: 511.

**Description.** Female. Carapace, sternum, and legs orange. Dorsum of abdomen whitish and brown with brown folium (Figs. 580, 583), venter with a pair of white patches (Fig. 584). Eyes subequal. Anterior median eyes 1.5 diameters apart, 1.5 from laterals. Posterior median eyes their diameter apart, 2.5 from laterals. Abdomen oval, wider than long, with indistinct humps (Figs. 580, 583). Total length 6.2 mm. Carapace 2.1 mm long, 1.9 wide. First femur 2.2 mm, patella and tibia 2.7, metatarsus 1.7, tarsus 0.7. Second patella and tibia 2.5 mm, third 1.3, fourth 2.0.

**Variation.** Total length of females 4.6 to 6.2 mm. The dorsal pattern of the abdomen is variable and one specimen from Costa Rica has the dorsum white. Each one of the specimens has a scape of slightly different shape (Figs. 578, 581).

**Diagnosis.** *Aculepeira gravabilis* differs from *A. aculifera* (Fig. 568) by having a shorter abdomen (Fig. 580) and only one pair of white spots on its venter (Fig. 584). It differs from *A. escazu* (Fig. 586) and *A. azul* (Fig. 590) by having the plates of the epigynum in posterior view about equal in width (Figs. 579, 582). The placement in *Aculepeira* is tentative.

**Natural History.** The female from Honduras was collected in a tree top.

**Records.** HONDURAS *Atlantida*: Lancetilla, July 1929, ♀ (A. M. Chickering, MCZ). COSTA RICA *San José*: Bajo Hondura, 1300 m, Mar. 1985, ♀ (W. Eberhard, MCZ). PANAMA *Chiriquí*: El Volcán, Aug. 1950, 3♀ (A. M. Chickering, MCZ). *Panama*: Cerro Jefe, 30 Dec. 1970, 2♀ (D. Quintero, MIUP).

#### *Aculepeira escazu* new species

Figures 585–588; Map 7

**Holotype.** Female from above Escazú, 2000 m, San José Prov., Costa Rica, Mar. 1983 (W. Eberhard, SAE 15), in MCZ. The specific name is a noun in apposition after the type locality.

**Description.** Female. Carapace streaky, yellowish with white and black setae; sternum light yellowish, with brown borders. Legs yellowish with brown rings. Dorsum of abdomen contrastingly marked with a posterior folium (Fig. 587); venter with a pair of white patches side by side (Fig. 588). Posterior median eyes 1.2 diameters of anterior medians; posterior lateral eyes 0.8 diameter. Anterior median eyes 1.2 diameters apart, 2 from laterals. Posterior median eyes a little more than a diameter apart, 3.5 from laterals. Abdomen subspherical with humps (Fig. 587). Total length 5.6 mm. Carapace 2.6 mm long, 2.3 wide. First femur 3.0 mm, patella and tibia 3.6, metatarsus 2.3, tarsus 1.1. Second patella and tibia 2.9 mm, third 1.9, fourth 2.7.

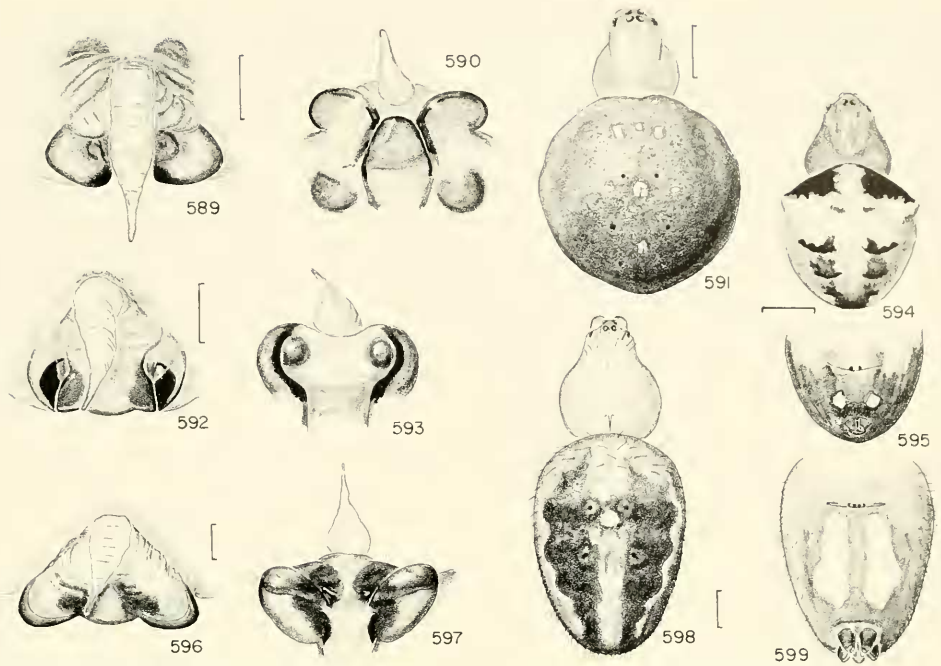
**Diagnosis.** This species differs from *A. gravabilis* (Figs. 579, 582) and *A. azul* (Fig. 590) by having the median plate of the epigynum much wider than the lateral plates (Fig. 586). The placement in *Aculepeira* is tentative.

#### *Aculepeira azul* new species

Figures 589–591; Map 7

**Holotype.** Female from Cerro Azul, 600 m elevation, Ciudad Panamá, Panama, 1 Jan. 1945 (C. D., M. H. Michener), in AMNH. The specific name is a noun in apposition after the type locality.

**Description.** Female. Carapace light orange, eyes with abundant black pigment. Sternum dusky orange. Coxae light orange; legs dark orange, patellae lightest, tarsi darkest. Dorsum of abdomen dark orange-gray with several white spots (Fig. 591). Venter light orange-gray, with a white band on each side, connecting anteriorly; spinnerets brown, area surrounding spinnerets dusky. Posterior median eyes 1.5 diameters of anterior medians; posterior lateral eyes same diameter as anterior medians. Anterior median eyes 0.7 diameter apart, 1.3 from laterals. Posterior median eyes 0.6 diameter apart, 1.7 from laterals. Legs short. Abdomen spherical, punctate, and without hairs. Total length 5.4 mm. Carapace 2.3 mm long, 1.8 wide.



Figures 589–591. *Aculepeira azul* n. sp., female. 589. Epigynum, ventral. 590. Epigynum, posterior. 591. Dorsal.

Figures 592–595. *A. visiten* sp., female. 592. Epigynum, ventral. 593. Epigynum, posterior. 594. Dorsal. 595. Abdomen, ventral.

Figures 596–599. *A. busu* n. sp., female. 596. Epigynum, ventral. 597. Epigynum, posterior. 598. Dorsal. 599. Abdomen, ventral.

Scale lines. 1.0 mm, genitalia 0.1 mm.

First femur 1.9 mm, patella and tibia 2.1, metatarsus 1.3, tarsus 0.8. Second patella and tibia 2.0 mm, third 1.2, fourth 1.8.

**Diagnosis.** This species differs from *A. gravabilis* (Figs. 579, 582) and *A. escazu* (Fig. 586) by the shape of the posterior plates of the epigynum; the lateral plates are oval (Figs. 589, 590). The placement in *Aculepeira* is tentative.

#### *Aculepeira visiten* new species

Figures 592–595; Map 7

*Parawixia darlingtoni* Bryant, 1945: 382, fig. 21, ♀.

Female only, not male holotype.

**Holotype.** Female holotype from La Visite, 1800–2100 m, [18°22'N, 72°12'W], Haiti, 16–23 Sept. 1934 (P. J. Darlington), in MCZ. The specific name is a noun in apposition after the type locality.

**Description.** Female. Carapace orange-brown, lightest between median eyes, with

white setae. Chelicerae, labium, endites brown. Sternum orange, sides brown. Coxae light orange; legs orange-brown with narrow darker rings. Dorsum of abdomen white with anterolateral black patches and pairs of black patches posteriorly (Fig. 594); venter dusky with a pair of round white spots (Fig. 595). Posterior median eyes 0.7 diameter of anterior medians, laterals 0.7 diameter. Anterior median eyes 1 diameter apart, 1.5 from laterals. Posterior median eyes 1.5 diameters apart, 2.2 from laterals. Abdomen subspherical with large anterolateral humps (Fig. 594). Total length 4.2 mm. Carapace 1.7 mm long, 1.6 wide. First femur 1.9 mm, patella and tibia 2.2, metatarsus 1.2, tarsus 0.5. Second patella and tibia 1.9 mm, third 1.1, fourth 1.6.

**Diagnosis.** The female differs from that

of *A. busu* by having two round white spots on the venter of the abdomen (Fig. 595) and by the shape of the lateral plates of the epigynum (Figs. 592, 593). The placement in *Aculepeira* is tentative.

*Aculepeira busu* new species  
Figures 596–599; Map 7

*Holotype*. Female holotype and two female paratypes from Mt. Busú, 1000–1300 m, Sierra Martín García, Dominican Republic, Hispaniola, June 1983 (G. Flores, A. Gross), in MCZ. The specific name is a noun in apposition after the type locality.

*Description*. Female. Carapace orange. Chelicerae, labium, endites, sternum orange. Coxae lighter orange; legs orange with indistinct brown rings. Dorsum of abdomen with brown folium (Fig. 598); venter with two white rectangles, dusky posteriorly (Fig. 599). Eyes subequal. Anterior median eyes 0.8 diameter apart, 1.5 from laterals. Posterior median eyes 0.9 diameter apart, 2 from laterals. Abdomen oval (Fig. 598). Total length 9.5 mm. Carapace 3.5 mm long, 2.9 wide. First femur 3.6 mm, patella and tibia 4.6, metatarsus 2.8, tarsus 1.3. Second patella and tibia 4.0 mm, third 2.5, fourth 4.0.

*Diagnosis*. This species differs from *A. visite* (Figs. 592–595) by having a longer abdomen (Fig. 598), two white rectangles on the venter of the abdomen (Fig. 599), and by the shape of the lateral plates of the epigynum (Figs. 596, 597). The placement in *Aculepeira* is tentative.

*Paratypes*. DOMINICAN REPUBLIC in gorge nr. Isla, nr. Hoy de Pelembito, 10 Dec. 1978, ♀ (D. G. Robinson, MNSD).

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